

## PHENOLICS ESSAY BY AGA HILFERTY

Phenolic compounds (polyphenols) contribute to wine appearance, texture and mouthfeel.

Tannins are found in skins, stems, pips, and seeds, and cause drying sensation on the palate, similar to the astringency feeling after drinking strong tea. Degrees of ripeness, concentration, and polymerization (smoothing, integrating effect achieved by aging) will dictate the style of wine.

Anthocyanins are responsible for color of red wine and are found on the inner side of skins. Additionally, they undergo complex chemical processes to assist in evolution of tannins, but due to a limited scope of this paper this will not be discussed.

In the vineyard care is taken to provide optimum temperature/sunlight. Anthocyanins are quite resilient, doing best at 15-25C. Tannins need sun and warmth, but cool night are necessary to prevent fast accumulation and ensure retention of acidity. Tannins need to be balanced with sugars (future alcohol), and acidity, to be palatable. Thus, in regions such as Riverina, where sun can be relentless, shading is employed - De Bortoli wines coined their own system "Riverina Sprawl", where single foliage wire provides respite. Elsewhere, such as Burgundy, maximum exposure promotes ripeness, so best sites are facing south/south-east.

Tannins can have various characteristics:

- Unripe - can feel green, stalky on the palate.
- In inexpensive production, overzealous crushing/pressing results in breaking seeds and bitterness.
- Some cultivars are difficult to manage - Zinfandel tends to ripen unevenly. If sorting not done, underripe grapes are processed with overripe, and jammy flavors will be pierced by green, leafy undertones.
- Cultivars rich in tannin (Syrah) grown in places with extreme sunshine at high altitudes (Elqui) will develop intense tannins, which when polymerize, become velvety.
- Wines designed for long aging in bottle (Vintage Port), have overpowering, grippy tannins upon release. Those develop into smooth complement of rich fruit and high alcohol.

Anthocyanins are more extractable in aqueous solution, tannins in alcoholic. If more color is needed, cold soaking of crushed fruit will be used. Cap management will continue extraction, and as the fermentation takes on speed, more tannins are extracted. The higher the temperature, the more, which in cultivars rich in tannins (Cabernet Sauvignon), temperature may be lowered so not to over-extract.

Some cultivars are naturally low in color. Winemakers may choose to extract it by cold soak, but still want to take advantage of adding tannic structure. In Yarra Valley, many Pinot Noir producers soak destemmed fruit for color, and then add stems to the fermentation. This results in more stable, richer color, and spicier, higher tannin, perfect to balance out higher acidity.

Anthocyanins management is important in Rose. Since pale color is desired in Provençal Vin Gris, it does not undergo any maceration, but is immediately pressed for fresh fruit and avoiding phenolics, while collecting only minimum color. Therefore, cultivars such as Grenache Noir/Tibouren naturally low in color are used.

It's also worth mentioning, that additional tannins are extracted from oak, so it takes skill of the winemaker to predict evolution for a balanced final product.