

Building an Integrated Program for Grape and Wine Phenolics

ETS now offers a group of analytical tools for the evaluation of phenolic compounds in grapes, juice, fermenting must and wine. Both grape growers and winemakers can use these analytical options to develop custom programs for phenolic management.

The phenolic analyses offered by ETS are designed to be flexible. Growers and winemakers can use these tools to target specific aspects of their production, monitor a process or answer a specialized question. They can be used together to develop a comprehensive program for phenolic management from grape ripening through wine making to finished wines.

Vineyard Decisions

using: *rapid phenolic panel for grapes*

Phenolic compounds in red wine grapes are directly linked to eventual wine flavor, color and aging characteristics. Monitoring phenolic compounds can provide a more complete illustration of fruit maturity than a simple Brix measurement.

As wineries learn to evaluate grape phenolic composition, these parameters will become as useful and indispensable as Brix or TA in evaluating the development and maturity of red wine grapes.

Understanding Raw Materials

using: *rapid phenolic panel for grapes*

Successful winemaking strategies require accurate information on grape composition. A clear picture of grape tannin content, seed maturity and potential color helps in the design of fermentation and maceration regimes appropriate for the fruit and target wine styles.



Phenolic Analyses Summary

Rapid Phenolic Panel for Grapes

- A wine-like extraction of grape phenolics
- Analysis of the four major grape phenolic compounds associated with wine color and tannin development.
- Whole berries or whole clusters.
- Measures: tannin, catechin, polymeric anthocyanins, total anthocyanins.

Rapid Phenolic Panel for Wine

- Analysis of the four major phenolic compounds associated with wine color and tannin development.
- Similar to the grape panel but without an extraction step.
- Measures: tannin, catechin, polymeric anthocyanins, total anthocyanins.

Red Wine Phenolic Profile

- Comprehensive analysis of twelve phenolic compounds
- Reported as a comparative graph against standards based on averages or historic benchmarks.
- Measures: gallic acid, catechin, epicatechin, tannin, caftaric acid, caffeic acid, quercetin glycosides, quercetin, monomeric anthocyanins, malvidin, total anthocyanins, polymeric anthocyanins.

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Managing Fermentation

using: *rapid phenolic panel for wine*

The tannin content of wine is mainly determined by the end of fermentation/maceration. Monitoring phenolics during this critical period will enable winemakers to better control the process by increasing or decreasing phenolic extraction.

Wine Lot Characterization

using: *red wine phenolic profile*

After the completion of fermentation/maceration, a wine lot typically represents a specific vineyard and fermentation tank. This is an excellent point for quality control. A comprehensive phenolic profile of new wine is a powerful tool for monitoring block to block variation and the effects of winemaking processes.

Blending

using: *rapid phenolic panel for wine or the red wine phenolic profile*

Winemakers interested in consistent tannin and color levels benefit by comparing the phenolic profiles of bulk wines prior to blending. Potential blends can be compared to target phenolic levels and benchmarks prior to final blend preparation.

Bottled Wine Characterization

using: *red wine phenolic profile*

Many wineries establish QC benchmarks for phenolic content immediately after bottling. This is especially useful for determining product consistency and for monitoring wine development during aging.

Finished Wine Evaluations

using: *red wine phenolic profile*

A historical review of products from within a winery and evaluation of similar products from other producers is an excellent way to establish phenolic benchmarks. This is often the first step in building an integrated program of phenolic analyses. A careful review of finished wines combined with sensory evaluation and market feedback can identify program strengths and weaknesses. The identification of desirable levels for key phenolic components creates targets that can be incorporated into process control points in the vineyard and winery.

Analytical Details

Applications	Phenolic Analysis	Sample Size	Turnaround
Grape Phenolics			
Whole Cluster Sample	Rapid Phenolic Panel for Grapes	20-40 clusters	48 hrs
Whole Berry Sample	Rapid Phenolic Panel for Grapes	> 250 g	48 hrs
Wine Phenolics			
Fermenting Wine	Rapid Phenolic Panel for Wine	60 mL	24 hrs
Finished Wine	Red Wine Phenolic Profile	60 mL	5 days

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