

Harvest 2026: Tackling Climate Stress with Direct At-Winery Analysis

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1. Introduction: The Climate Context of the 2026 Harvest

The 2026 harvest represents a fundamental test for modern oenological management, characterized by a clear phenological acceleration on a European scale. The exceptionally high temperatures recorded in the early part of the summer season — with prolonged heat peaks and reduced night-time temperature ranges — have significantly advanced field operations, leading to early harvests as soon as the beginning of August in Franciacorta and between the end of July and the first ten days of August in Sicily and Burgundy.

This scenario has triggered severe "harvest compression", leading to the simultaneous ripening of traditionally staggered cultivars. This overlap confronts the winemaker with two primary critical issues: logistical congestion and maturation decoupling. On an operational level, the synchronous delivery of grapes saturates the crushing lines, the efficiency of the refrigeration systems, and the availability of wine vats. On a biological level, however, prolonged heat stress pushes the vine into a defensive state, inducing a rapid sugar accumulation through concentration which is not matched by adequate phenolic and aromatic maturity, aggravated by a drastic collapse of malic acid. Managing such a vintage requires abandoning traditional metrics: any decision on harvest times and winemaking protocols now demands real-time analytical monitoring of the acid balance and the nutritional profile of the must.

2. Heat Stress: Analysis of the Chemical and Bio-Chemical Impact

Managing grapes subjected to prolonged heat stress requires a deep understanding of the

ongoing biochemical alterations, as the intensity of the 2026 heatwaves has generated extreme physiological responses. The analysis of musts from this vintage reveals three critical misalignments that require careful monitoring:

- **Technological-Phenolic Decoupling:** High temperatures stimulate a rapid accumulation of sugars, which is not matched by a parallel and adequate phenolic and color maturation. Concurrently, water stress induces a contraction in berry volume, altering the pulp/skin ratio. This phenomenon concentrates tannins and polyphenols in reduced volumes, triggering the risk of bitter and astringent extractions during the maceration phase.
- **Degradation of Malic Acid and pH Rise:** Extreme heat drastically accelerates the respiratory metabolism of the grape, leading to a vertical collapse of malic acid. As analyzed by Ehsani (2026), the levels found in European musts this vintage are close to 1 g/L (compared to typical averages of 3-4 g/L). This severe loss of fixed acidity causes a rapid rise in pH, exposing the must to serious microbiological vulnerabilities.
- **Variability of Yeast Assimilable Nitrogen (YAN):** Drought conditions severely limit transpiration and the absorption of nutrients from the soil: under water deficit conditions, the vine tends to use nitrogen almost exclusively for its own metabolism, generating a must deficient in Yeast Assimilable Nitrogen. Managing a must with high alcoholic potential combined with nutritional deficiencies exponentially increases the

risk of stuck fermentations, favoring the appearance of olfactory defects linked to reduction (H₂S production).

3. From Tradition to Precision: The New Winery Operations

In an extreme vintage like 2026, the chemical and fermentative dynamics of musts, exacerbated by high ambient temperatures, can undergo critical drifts within a few hours. Winery management therefore requires the acquisition and monitoring of parameters in real-time without relying on external laboratories. Having immediate data during the crushing phase, the winemaker can intervene on crucial aspects: promptly correct the pH (for example through additions of tartaric acid) to compensate for the loss of acidity; abandon standard protocols in favor of targeted nitrogen supplementation, calculated on the actual YAN levels to prevent stuck fermentations; and calibrate polyphenolic extractions to stabilize the color and smooth out tannins rendered aggressive by water stress.

4. CDR WineLab®: An Ally in Emergency Management

In this delicate scenario, **CDR WineLab®** proves to be a strategic tool for real-time quality control. Its ability to provide precise data directly on the grape reception platform allows for managing harvest compression with superior responsiveness compared to traditional methods. The ability to act in just a few minutes and autonomously, without the need for highly specialized personnel and complicated laboratory equipment, enables the evaluation of every batch of grapes—a fundamental necessity given the extreme heterogeneity of vineyards affected by drought.

Analytical Parameter	Impact on Oenological Decision
<u>Sugars (Glucose and Fructose)</u>	Exact calculation of potential alcohol; monitoring for stuck fermentations.
<u>L-Malic and L-Lactic Acid</u>	Management of freshness and control of malolactic fermentation.
<u>Yeast Assimilable Nitrogen (YAN)</u>	Choice of nutrition protocol to prevent reduction defects and H ₂ S.
<u>Total Acidity and pH</u>	Immediate corrective actions for the biological stability of the must.
<u>Total Polyphenol Index (TPI)</u>	Decision on the duration of maceration to mitigate bitter tannins.

5. Conclusion: Internal Analysis as a Decision-Making Guide

The current vintage demonstrates unequivocally that conventional winemaking protocols are no longer sufficient to cushion climate extremes. Faced with increasingly compressed intervention windows, the winemaker's experience and intuition require immediate diagnostic feedback. Adopting a rapid analysis system directly in the winery, such as the **CDR WineLab®**, means eliminating the time gap between detecting an anomaly and correcting it. Returning full process control to the technician, transforming instantaneous data into targeted action, is today the most concrete strategy for managing grape stress and preserving the balance and identity of the wine.

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