Creating a Successful Grape Sampling Strategy

The key to a good estimate of fruit maturity is sample collection that is truly representative of the entire unit/ block harvested. This requires a systematic sampling strategy that collects a random sample large enough to objectively represent the entire crop that will be harvested and processed. A good harvest sample should give analytical results that are comparable to the juice or must composition at the time of harvest and processing.

It is important to recognize the high level of variability in fruit composition that exists within a vineyard, between clusters on a single vine, and even within a single fruit cluster.

- Vineyard soil variations can result in high and low vigor areas within a given vineyard.
- Clusters located in different positions on a vine may have very different degrees of sun exposure.
- Flowering occurs over a one to two week period resulting in berries that are different ages at harvest.
- Interior and exterior berries on a cluster have different heat and light exposure and as a result may have very different composition.

The first step in collecting a representative sample is the development of a sampling scheme that includes fruit from vines in every area of the vineyard block. Vines can be selected either randomly throughout the block or by using a grid system (i.e.: sample every twentieth vine in every fourth row). Avoid sampling vines at the end of rows or odd vines that are obviously different from the majority of vines in the vineyard block. It is best to determine the sampling scheme before you enter the block, and adhere to the prescribed sampling routine.

Variability within the block will affect sample size. Vineyards with a high degree of variability require sampling a larger percentage of the vines to obtain a representative sample.

Samples should contain proportional quantities of fruit collected from exposed and shaded locations from different parts of the canopy and from opposite sides of the row. Secondary clusters and sun burned or diseased fruit should only be included in the sample if they will be harvested and processed along with the rest of the crop.

Samples may be taken as individual berries or whole clusters, but either way careful attention must be given to obtain a truly representative sample.

Field Berry Sampling

- Take 200 to 400 berries per block
- Take berries from random clusters from both sides of the row
- Take four berries from each cluster , one from the top, bottom, front and back of the cluster, or take one berry per cluster, alternating positions on the clusters.

Cluster Sampling

Collecting cluster samples is efficient in the vineyard but requires extra work to break apart samples into loose berries. ETS charges a $35 cluster prep fee per sample for phenolic and moisture analysis. Many clients perform this step prior to delivery of samples.

- Take 20 to 40 cluster per block
- Sample random vines or sample using a pre-determined grid sampling pattern
- Take one cluster per vine

Cluster + Berry Sampling

Berry position in the cluster has a great effect on grape phenolics and moisture. As a result, special sampling procedures are required for the Phenolic Panel for Grapes and the analysis of Moisture Content.

- A sample containing twenty to forty clusters should be taken in the field as described above. All the berries from the cluster should be carefully removed minimizing juicing.
- The berries should be well mixed and at least 250 g (0.5lbs) of berries should be sent to ETS.
- If additional analyses are required such as a juice panel or grape moisture content, send more berries A sample of 500g (1lb) is usually adequate for a range of tests.

This technical sheet was adapted from: Watson, B. 2003. Evaluation of Winegrape Maturity. In: E.W. Hellman (ed.) Oregon Viticulture. Oregon State University Press. Corvallis, Oregon. Pp. 235-245.

Packaging Juice Samples

Processing samples

Most harvest samples received at ETS Laboratories come to the laboratory as juice. Berry samples can be easily pressed by hand in their collection bag and the juice can be decanted into a 60 mL sampling tube. Cluster samples for juice analyses can be crushed in a bucket by hand, or in a heavy-duty plastic bag. Mix juice well and transfer to a 60 mL sampling tube. ETS will accept cluster samples for phenolic analysis only at the St. Helena and Healdsburg facilities.

Harvest Juice Panel Analyses

- 60 ml juice sample - may be fresh or treated by boiling or freezing to stabilize for transport.
- BOILING: Boil samples with a loosely fitting cap on to prevent sample evaporation and concentration. Do not over boil.
- FREEZING: Do not overfill tube. Leave a small space for expansion prior to freezing sample. Freeze sample in plastic container - not glass - to prevent expansion breakage.
- Clearly indicate juice treatment (frozen or boiled) on each individual sample label.

Please note we are unable to run Harvest Juice Panels on fermenting samples. Order Chemistry panels and individual component tests on fermenting samples and wine samples.

Scorpions™ Analyses

- 30 ml juice sample – Shipped on ice or cold packs via overnight delivery.
- DO NOT BOIL OR FREEZE samples submitted for Scorpions™ Panels.
- Boiling or freezing samples for Scorpions™ will kill yeast and bacteria cells, resulting in inaccurate results.

Enhanced Juice Panel (2 tubes required)

- 60 ml juice sample - fresh sample or sample treated/stabilized sample for transport following Harvest Juice Panel sampling protocol and labeling

plus

- 30 ml juice sample - untreated sample following Scorpions™ Panels sampling protocol and labeling

Common Grape Analyses		Sampling Method	Minimum Sample Size	Stabilization
ETS Juice Panel		Field Berry Sampling	100 berries or 60 ml juice	Can Freeze or Boil
Scorpions™ Volatile Acidity Juice Panel		Field Berry Sampling	30 ml juice	Keep Cool
Enhanced Juice Panel	tube 1 juice analysis	Field Berry Sampling	100 berries or 60 ml juice	Can Freeze or Boil
	tube 2 Scorpions™	Field Berry Sampling	30 ml juice	Keep Cool
Scorpions™ Juice Spoilage Organism Panel		Field Berry Sampling	30 ml juice	Keep Cool
Grape Moisture Content		Cluster+Berry Sampling	250g berries	Keep Cool
Green Bell Pepper IBMP or Smoke Taint		Field Berry Sampling	200 berries or 60 ml juice	Keep Cool