



On-Farm Pre-Harvest Testing of Table Grapes

Background

The Australian table grape industry has adopted updated minimum maturity standards for Crimson, Flame, Menindee, Red Globe and Thompson that are well-aligned with consumer taste expectations.

The new standards have been designed to achieve a minimum of 80% consumer acceptability at retail. Brix is the preferred maturity measure. The meet the new minimum maturity standard:

Crimson, Flame, Red Globe and Thompson.	≥ 80% of fruit in a representative sample have Brix ≥ 16°
Menindee / Sugraone / Superior	≥ 80% of fruit in a representative sample have Brix ≥ 15.5°

Note that your receiving Distribution Centre may be expecting the results of your on-farm testing to accompany your consignment.

Objective

To assess fruit maturity pre-harvest, by collecting and analysing samples of fruit that are representative of the variety and block being tested.

The purpose of this document is to assist growers validate whether fruit on the vine meet the minimum maturity standard before harvest.

This protocol can be used for either a select pick or strip pick. For a select pick, the challenge is to ensure that pickers pick similar fruit to that selected by the sampler.

A related protocol for fruit that have just been picked should be used at picking.

Equipment Required

- Bunch snips
- Ziplock bags (pre-labelled) that are large enough to hold 24 berries
- Permanent marker
- Smart phone, with camera, email and compass function



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- Eskis
- Garlic crusher for extracting juice from each berry
- Refractometer for measuring Brix (preferably digital) with a current (less than one year old) calibration certificate
- Spare batteries for the refractometer
- Distilled or deionised water, to “zero” the refractometer
- Tissues or lint-free cloth to clean refractometer



Before you start

Ensure that the refractometer has a current calibration certificate (not older than 12 months) and the calibration samples cover the range to be measured.

Clearly identify which blocks are to be tested and where they are located. Mark each ziplock bag with a sticker showing

- Date and time of sampling
- Block name
- Variety
- Whether bunches have been trimmed

When to start sampling and how often

Start testing approximately 4 weeks before the expected harvest date. Each week return to the same block and sample from different rows.

Sampling Grapes from a Block

Sample Collection Path

Select 4 rows for sampling evenly across the block as shown in Figure 1.

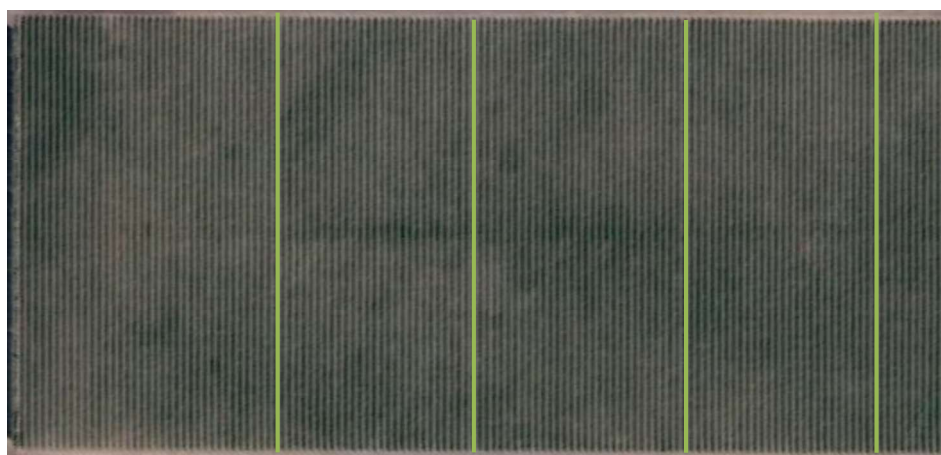


Figure 1 Example grid sampling pattern.

If there are areas within the block with significantly different soil properties, include fruit from these locations, but only in proportion to the fraction of the block. Avoid



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sampling from vines in outside rows and close to headlands. Also avoid vines that are under stress.

Keep grape samples cool until they are measured. Carry a small Eski through the vineyard with a freezer pack in the bottom covered by a layer of bubble wrap.

Grape Selection

Sample 20 berries (1 berry from each from 20 separate bunches) spread evenly along the sampling path. In each row, collect 5 berries at even intervals along the row. Sample from bunches that are large and small, tight and loose as well as those from various positions on the vine, for example, exposed to full sun or full shade, close to the crown etc. At each sampling location along the row, identify the bunch from which you will sample a single fruit.



Sample individual berries from the following positions within a bunch:

- Top x 2, Middle x 2, and Bottom x 1 (5 in total),
- Around the bunch North, South, East and West (4 positions), alternating inside and outside the bunch.

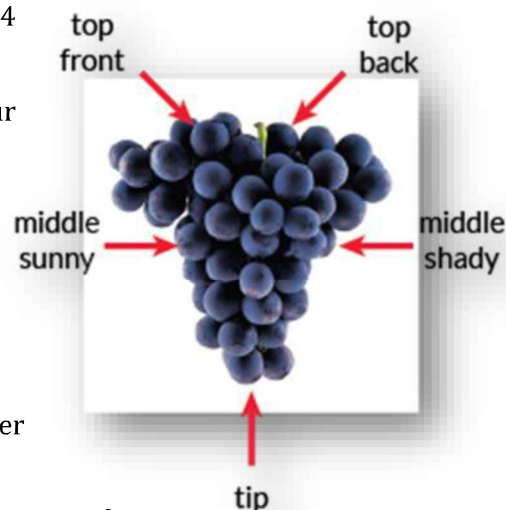
Use all combinations of Top, Middle, Bottom (5), and four positions around the bunch to give a total of 20 berries.

It helps not to look at the fruit being selected. Do not select a berry because it “looks good”. Reject any damaged fruit. Use clippers to make sure berries are not damaged and to access berries in tight bunches.

What to do with the samples

Double check that the bag is properly labelled. Record whether bunches have been tailed.

Place the ziplock bag in an Eski if the berries are not to be tested immediately.



Measurement

Find a shaded location to take measurements. Refractometers sometime give an error message if used in direct sunlight.

Select a sample bag (comprising 20 berries).

- “Zero” the refractometer at the start of each day of testing
 - Clean the refractometer well with a dry lint-free cloth or tissue
 - Place a small amount of distilled or deionised water in the refractometer well
 - Press the **Start** key and check if the Brix reading is **0.0**.
 - If not, with water in the well press the **Zero** key. The display should read **000**.
 - Clean the refractometer well with a dry lint-free cloth or tissue.
- Select the next berry to be measured.
- Using your fingers or a garlic crusher, extract enough juice to place in the refractometer well and press the **Start** key.
- Enter the Brix measurement into the spreadsheet supplied or write it down.
- You may find a Smartphone App a convenient way to record measurements
- Rinse the refractometer well with clean water and dry with a lint-free cloth or tissue.
- Repeat the previous four steps until all berries are measured.



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- When you are finished measuring all fruit and entering them into the spreadsheet, the spreadsheet will calculate the percentage of fruit above the minimum Brix and advise whether the sample has met the minimum maturity standards.
- If you are not using the spreadsheet supplied, count the number of berries with Brix of 16° or more (15.5° or more for Menindee/Sugraone/Superior). Divide that number by 20 to calculate the percentage (multiple by 100 if that helps). If the percentage is 80% or more the block has met the minimum maturity standard.
- Send the completed spreadsheet or photo of your written data to data@delytics.com. If you have any questions, please call Terry Rudge on 0419 335 802.