



On-Farm Testing of Table Grapes during Picking

Background

The Australian table grape industry has approved new minimum maturity standards for Crimson, Flame, Menindee, Red Globe and Thompson that align 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°

The following protocol has been designed to help growers test fruit in boxes as they are being picked, to validate whether the picked fruit meet the minimum maturity standard.

Objective

To assess fruit maturity at the time of harvest, by collecting and analysing samples of fruit that are representative of the fruit being picked.

The purpose of this document is to enable growers to validate that fruit being picked meets the minimum maturity standard.

Fruit is to be continuously checked during picking so that harvest management can be adjusted to ensure that picked fruit that continues to meet the minimum maturity standard. A related protocol for pre-harvest maturity assessment is also available.

Equipment Required

- Bunch snips
- Small ziplock bags pre-labelled
- Permanent marker



- Large ziplock bags
- Smart phone, with camera, email and compass function?
- Eski
- Garlic crusher for extracting juice from each berry
- Refractometer for measuring Brix (preferably digital) with a current (less than one year old) calibration certificate
- Distilled water or tap water for zero setting the digital refractometer
- Lint-free cloth or tissues to clean refractometer

Sampling Grapes from boxes immediately post- harvest

Box Selection

Pickers pick bunches into boxes in the field. At regular intervals during harvest, a picking supervisor samples 20 berries. These are selected from 20 boxes representative of all pickers in the gang.

Grape Selection

One berry is sampled from a bunch in each box as follows. Select one fruit from either the top, middle, and or bottom of a bunch. The idea is to sample in a pattern where the sampler collects two berries from the top and middle of a bunch and one from the bottom. At the end of sampling, the sampler should have removed eight berries from the top and middle of the sampled bunches and four berries from the bottom.

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

When to start sampling and how often

Start testing right at the start of each days picking and sample regularly through the day.

Measurement

- Ensure that your refractometer has been calibrated. This should be done annually.
- If using a digital refractometer, find a testing location that is out of direct sunlight. Otherwise the error message “HHH” will show
- “Zero” the refractometer each day, prior to use
 - Clean the refractometer well with a dry lint-free cloth or tissue
 - Fill the refractometer well with distilled water or deionised water
 - 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 first berry to be measured.
- Using your fingers or a garlic crusher, extract enough juice to place in the refractometer well. Press the **Start** key.
- Record the Brix measurement. You can enter readings into the App or spreadsheet supplied or simply write them down.
- 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.
- Count the number of readings of 16° Brix or more (15.5° for Menindee) and divide that number by the total number of fruit tested. To calculate the percentage multiple by 100. If the percentage is 80% or more, the sample has met the minimum maturity standard.
- If using the spreadsheet or APP, the percentage is automatically calculated when you have finished entering all readings.
- 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.

Decision Making

Once you have measured 20 berries, the number of berries with a Brix reading of less than 16.0° (15.5° for Menindee/Sugraone/Superior) should be less than 5.

Pick another berry and measure it. Cross off your earliest reading. With the latest 20 readings, count the number of berries with a Brix reading of less than 16.0° (15.5° for Menindee/Sugraone/Superior Seedless) and so on. This should be less than 5. Adjust picking accordingly.