



Table Grape Maturity Testing in a Distribution Centre

Objective

To establish a protocol for evaluating the maturity of grapes at distribution centres operated by supermarkets and by direct suppliers to supermarkets. The protocol includes collection and analysis of fruit samples to determine if consignments meet the minimum maturity standard.

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 all growers have been supplied with on-farm pre-harvest and post-harvest sampling protocols, so DC's should expect to be supplied with the results of these tests.

Before you Start

Obtain the following equipment:

- Bunch snips
- Refractometer for measuring Brix (preferably digital)
- Deionised water
- Paper towels

Identify a suitable testing location. To get reliable readings from the refractometer, the temperature of the location should be at least 9.0°C.

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

Plan inspections so there is enough time for the temperature of the refractometer and sample fruit to stabilise before testing.



Sampling

Box Selection

Select 5 boxes from different layers of five different pallets in the consignment. Check for identification marks that indicate that the consignment comprises fruit of different origins. If these are identified, include boxes with each code on a pro rata basis. If there are less than 5 pallets in the consignment, more than one box may be sampled from a pallet. Do not sample boxes from the top layer of pallets.

Grape Selection

Select 2 bunch bags from each Box. Remove the largest bunch from each bunch bag and sample 2 berries from the bunch.

The sample size is 20 berries. The sampling pattern involves selecting fruit from the top, middle and bottom of a bunch. At the end of sampling, the sampler should have removed eight fruit from the top and eight fruit from the middle of sampled bunches and four fruit from the bottom.

Position	Number of berries
Top of bunch	8
Middle of bunch	8
Bottom of Bunch	4
Total	20

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.

Measurement

- Place the refractometer (and the berries to be tested) on the inspection bench for at least 15 minutes to allow them to warm or cool to the temperature of the inspection location (should be at least 9.0°C).
- Perform Zero Setting each day prior to using the digital refractometer
 - Clean the refractometer well with a dry lint-free cloth or tissue
 - Place a small amount of distilled water or tap 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.



- Check that the temperature is displayed at the top right of the screen. If “LLL” is displayed in this position, the temperature is too cold for the accurate operation of the refractometer. If so, find a warmer inspection location (9.0°C or warmer)
- Ensure that the temperature of the berries matches the temperature of the inspection location.
- Select the first berry to be measured.
- Use your fingers or a garlic crusher to 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.
- Rinse the refractometer well with clean water and dry with a lint-free cloth or tissue before testing the next berry.
- Repeat the previous four steps until all berries are measured.

Decision Making

If 5 or more berries have a Brix reading of less than 16.0° (15.5° for Menindee/Sugraone/Superior Seedless) sample another 5 boxes and repeat the grape selection and measurement processes.

If 9 or more berries out of the combined sample of 40 berries have a Brix reading of less than 16.0° (15.5° for Menindee/Sugraone/Superior Seedless) the consignment has not met the minimum maturity standard and should be rejected.

Most proprietary varieties will have different maturity requirements.