



Citrus Quality practical

Design and Technologies (food and fibre production)

Content description: South Australian Scope and Sequence

YEAR 10

Analyse and make judgements on the ethical, secure and sustainable production and marketing of food and fibre enterprises

- use the components that need to be managed sustainably in a food or fibre production system to develop a solution
- apply one emerging and innovative production technique to the creation of a solution
- apply the use of a digital tools to enhance the design of a food or fibre production system

TASK DESCRIPTION

Using the methods and tools used in the citrus industry, students conduct tests on citrus fruits to assess harvest readiness.

Once the laboratory skills have been developed, they can use this technique to investigate and compare citrus types (eg mandarin v orange) and varieties (eg Valencia v Navel oranges), assess the impact of storage times and conditions, or monitor fruit quality across the season.

RESOURCES:

Citrus Australia website (includes Citrus Quality Standard calculator)

<https://citrusaustralia.com.au/growers-industry/citrus-quality-and-maturity/>

Australian Citrus Quality Standards video

<https://youtu.be/fRrR6pbLm6Y?si=hdpM5YzL6jgCAydG>

Australian Citrus Quality Standards Manual

[CA_AusCitrusQualiStand_Manual_12pp_lowres_web_2.pdf](https://citrusaustralia.com.au/CA_AusCitrusQualiStand_Manual_12pp_lowres_web_2.pdf) (citrusaustralia.com.au)

Note: for this practical, a refractometer 0-32% is needed. These cost about \$120. Digital refractometers are also available but are more expensive. You may be able to borrow one from a local winery or horticultural producer.

SKILLS CHECKLIST

- safe work practices and use of PPE
- collaboration
- following instructions
- technical language
- clear communication
- accurate information
- logical, evidence based analysis
- links to industry practice



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1. Watch the Citrus Australia video which demonstrates the techniques being used Australian Citrus Quality Standards video <https://youtu.be/fRrR6pbLm6Y?si=hdpM5YzL6jgCAydG>
2. Schools should complete their own risk assessment for the materials and processes described and ensure appropriate PPE is provided.
3. Collect the equipment and materials required. **PPE will include enclosed shoes, eye protection and gloves.**
4. Follow the steps in the Australian Citrus Quality Standards Manual to assess the sugar and acid levels of the fruit being tested. **CA_AusCitrusQualiStand_Manual_12pp_lowres_web_2.pdf** (citrusaustralia.com.au)
5. Manually calculate the sugar: acid ratio or use the Australian Citrus Quality Standard Calculator on the Citrus Australia website <https://citrusaustralia.com.au/growers-industry/citrus-quality-and-maturity/>

SUGGESTED CITRUS MATURITY TESTING EQUIPMENT

The following list outlines materials commonly used in the maturity testing process.



Glass ware etc.:

- 1 x Auto fill burette 25ml in 0.1ml graduations, with squeezable bottle (some companies sell this as a complete unit called a Dr Shillings auto fill burette).
- 2ltr Sodium Hydroxide 0.1mol/0.1 (can be purchased in 1ltr - 4ltr bottles already prepared).
- 500ml Phenolphthalein 1% indicator solution BDH (this is used sparingly 4-5 drops per test so don't buy in bulk unless conducting multiple tests).
- 2 x 100ml conical flask (some people prefer 200ml as it is easier to see).
- 2 x 1 litre jug or other container to collect juice sample.
- 1 x Eye dropper and (optional small bottle with lid for phenolphthalein).
- 1 x Digital refractometer (optical can be used, temperature correcting preferred).
- Companies which can supply this material include:
 - Rowe Scientific - Adelaide 08 8186 0523 or Melbourne
 - VWR Australia International - 1300 727 696

Suggested juicer:

Breville Professional 800 Collection (800CP Die Cast Citrus Press).

Other materials:

- Paper towel
- Tissues
- Distilled or deionised water
- Knife
- Cutting board
- Sieve
- Digital scales to 3kg (or higher) in 1 gram graduations.
- 2 x 10ml syringes (available from chemist).

