

Workflow: Picking

Toolkit 4.1

Maturity Indexing

target audience

Farm managers and supervisors.

what it is

Maturity indexing is used to predict the optimum picking time for citrus fruit. This information, together with yield and fruit size estimates, is used to plan for harvesting and sent to the packhouse to assist with their planning.

Maturity graphs give an indication of when various citrus types and cultivars are ready for harvesting. The graphs below are based on research conducted by Citrus Research International in particular areas.

why it is important

Maturity indexing, together with yield and fruit size estimates, is used to plan for harvesting and sent to the packhouse to assist with their planning.

success factors

To be able to estimate when the fruit in a certain orchard or block will be ready for harvesting, maturity parameters of a sample of fruit taken from that block are monitored, measured, and plotted on a graph. Sampling is done weekly, from four to six weeks before the predicted harvest time. Twelve representative index trees are chosen and one fruit per tree from similar positions on the trees and of similar size are picked to make up the sample.

The maturity parameters that are monitored are:

- **Fruit Colour** – Fruit colour charts that can be obtained from the CRI are used for this purpose.
- **Juice Percentage** – Juice percentage is determined by weighing a sample of twelve fruit. The juice is then extracted from the fruit, filtered through a cheese cloth, and weighed. The juice percentage is the juice weight divided by the fruit weight.
- **Sugar Content or Total Soluble Solids (TSS)** – Sugar content is measured with a refractometer. The refractometer is set to zero with distilled water before measuring. The average of three readings is used to determine the sugar content.

- **Acidity** – Acid, or titratable acid, is measured by titration. We measure mainly citric acid, which is 70 to 90% of the acid in the sample. Usually, we take 20ml of well-mixed juice, add 5 drops of phenolphthalein as indicator, and titrate with a 0.1562 normal sodium hydroxide solution, until the mixture turns pink. The volume of sodium hydroxide in millilitres used in the titration is then read and divided by 20 to give the titratable acid percentage.
- **Sugar : acid ratio** – The sugar reading from the refractometer is divided by the acid percentage, to give us the sugar : acid ratio.

execution steps

See above.

assessment questions

Please Note: There is no minimum / maximum amount of questions you can add

1.	Are you measuring/assessing fruit colour?
2.	Are you measuring/assessing juice percentage?
3.	Are you measuring/assessing sugar content?
4.	Are you measuring/assessing acidity?
5.	Are you measuring/assessing sugar:acid ratio?

resources

1.	Citrus Academy AV module – Yield and Fruit Size
2.	Citrus Academy AV module – Maturity Indexing
3.	CRI maturity graphs
4.	Citrus Academy production learning material – Harvesting