

Workflow: Packhouse Management

Toolkit 4.4

Receiving

target audience

Packhouse managers, and supervisors.

what it is

When the fruit arrives at the packhouse from the orchard it is weighed, recorded, inspected, drenched, pre-sorted, washed, and prepared for processing or de-greening.

why it is important

The golden rule is that fruit that is unsuitable for the market, and especially the export market does not belong in the packhouse.

The procedure by which you receive and manage the initial processes is critical to ensure that you allow only suitable and clean fruit to enter the further packhouse process. It is your first line of defence and control and can improve the % of packable fruit on the grading line and reduce operating costs and the cost of non-compliance significantly.

Good process and practice also ensure that you comply with quality and inspection requirements for export.

success factors

- **Receiving** – When the fruit arrives in bins from the orchard, either in bins on flatbed trailers or in specialised trailers hitched to tractors, the key success factors are:
 - Correct storage and stacking of bins using a FIFO system (first in first out) to ensure that bins remain in this initial waiting area as short as possible. If bins cannot be processed quickly, they should be stored out of the sun.
 - Initial processing (e.g., weighing and inspecting) and drenching as soon as possible to remove field heat.
 - If fruit cannot be processed quickly and bins may need to wait for extended periods (e.g., over a weekend), it is best to store these bins (post drenching) in closed areas.

- **Weighing and recording** – The weight of the fruit in each bin or trailer is determined and recorded, along with the delivery date, the PUC of the production unit, the orchard and block number, the type and cultivar of the fruit, and any other relevant information.

Ideally, every trailer and/or bin is separately weighed, depending on how the fruit is transported, but some packhouses do not have that facility and rely on off-site weighbridges and applying an average weight to the bins in that delivery.

Recording systems to ensure traceability and to provide accurate operational data and reports (e.g., run reports) can vary from manual ticket system to digital readers and integrated systems. Increasingly, employing modern digital systems that are part of an integrated system is becoming the basic standard and basic best practice.

- **Packhouse deliver inspections** – If the fruit is destined for a phytosanitary market, it must be inspected at this point for false codling moth and fruit fly infestation. This inspection is part of the management system developed by CRI, aimed at eliminating the risk of FCM and fruit fly infestation of export fruit. (See the audio-visual module [Monitoring and Inspection for Phytosanitary Markets](#).)
- **Drench** – The purpose of the drench is to remove the field heat from the fruit, and to protect the fruit from decay during de-greening and storage. Best practice includes:
- A correct drenching process, whether automated or not, to ensure that coverage and contact time complies to defined standards.
 - Drenching as quickly as possible to remove field heat.
 - Drenching fruit that has to wait for an extended period of time, e.g., a weekend, before being processed further. Best practice would suggest that drenching fruit that cannot be processed within 6 hours of arrival is worth the effort and cost.
 - Drenching fruit destined for de-greening and ensuring that it is properly dry before entering the de-greening rooms.
 - Ensuring and maintaining the correct drenching solution, proper recycling processes, and renewing the solution regularly.
 - Ensuring that the tipping system is properly managed and cleaned regularly to prevent the build-up of biofilm.
 - Using the correct chemicals and agents.
- **Correct chemicals, dosages, and process** – Generally, fungicides, a water sanitiser and 2,4-D are used in the drench. 2,4-D helps to prevent the calyx from abscising. Key success factors include:
- Use only chemical products vetted and recommended by the CRI and follow their guidelines closely.
 - Ensure correct dosages and concentrations that comply with the residue thresholds set by the target market.
 - Ensure that drenched fruit is properly dry. Firstly, to prevent undesirable reactions with and breakdown of products in the fungicidal bath. And secondly, ethylene gas, used in de-greening, cannot penetrate through moisture and if fruit still has wet spots those areas will not de-green.
- **De-greening** – De-greening is a treatment that accelerates the rind colour development by exposing fruit to ethylene in special rooms in the packhouse. Ethylene is a natural hormone that is associated with cellular processes involved in ripening. Additionally, the rigorous

management of temperature, carbon dioxide levels, and humidity is also important in the de-greening process. Key success factors include:

- Fruit should only be de-greened after colour-break, meaning that natural colour development must have started for de-greening to work.
- Precision in the management of conditions in the de-greening rooms, whether automated or manual.
- Good practice of tracking the batches that have entered the de-greening room to ensure accurate timing for each batch.
- A clear commercial motivation, and commensurate process, because de-greening at some point compromises quality and shelf-life.

execution steps

Covered in the success factors above.

assessment questions

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

1.	Is your initial receiving process (arrival and queuing), equipment (bins and trailers), and infrastructure (storage, under roof) adequate?
2.	Are your bins weighed properly, ideally individually?
3.	Is your recording and tracking system (from orchard through the receiving process) effective, and ideally digitised?
4.	Is your delivery inspection for phytosanitary markets done and recorded properly?
5.	Is your drenching equipment and process adequate?
6.	DO you comply with chemical specifications, dosages, methodology and record keeping?
7.	Does your de-greening capacity and process meet requirements and standards?
8.	Is you administration and record keeping of all receiving activities in place?

resources

1.	Monitoring and Inspection for Phytosanitary Markets (Citrus Academy)
2.	Sour rot and Brown rot warnings (CRI - Cutting Edge 317/2021)
3.	A cautionary note on the management of pre-packhouse drench systems (CRI - Cutting Edge 186/2014)
4.	Packhouse inspections for false codling moth (CRI - Cutting Edge 155/2013)
5.	Recommendations for the pre-packline drench (CRI - Cutting Edge 136/2012)
6.	CRI Pre-Packhouse Drench

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| 7. | CRI Fungicide Bath In-line Drench |
| 8. | Citrus Packhouse Module 4 - Receiving and Initial Processes (Citrus Academy) |
| 9. | Citrus Packhouse – Receiving and Initial Processes (Citrus Academy) |