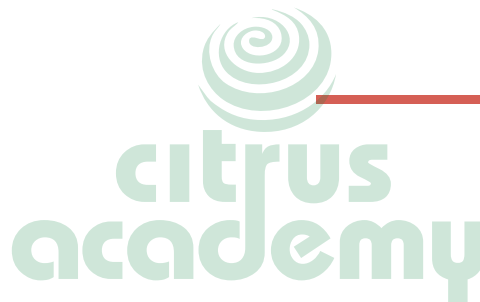

Citrus Packing

2 Packhouse Process Flow

Learner Guide



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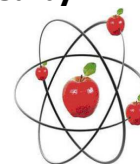
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information

Reference

More information on packhouse design, equipment and processes can be found in the CRI Production Guidelines, volume IV.

Introduction

Citrus packhouses are central to ensuring that growers get the best possible returns for their fruit. Before deregulation, most citrus packhouses were cooperative, meaning that the fruit of all the growers in an area packed were packed at one packhouse.

Since then, many growers have built their own packhouses. This means that we now have packhouses that pack less than 50,000 cartons of export fruit, right up to huge communal packhouses that pack up to 7 million export cartons every year.

Every citrus packhouse is different – there are no standard designs or hard and fast rules about what a packhouse should look like. Packhouses are designed based on the:

- ❖ Volume of fruit they handle
- ❖ Types of citrus they pack
- ❖ Requirements of the grower or growers whose fruit are being packed there
- ❖ Markets that the fruit will go to

Packhouse Actions

Separate Fruit

There are three major market segments for citrus fruit, and they are the export market, the local market and processing, mostly for juice and oils. Of these three, the export market is by far the most profitable and the most important to citrus growers.

The first action what a packhouse must be able to do, is to effectively and efficiently separate the fruit that will go to the three major market segments.

Apply Treatments and Processes

Next the packhouse design must take into account that there are different requirements for the fruit destined for these market segments. The requirements for export fruit is by far the strictest.

The second point is then that the packhouse must be designed so that the right treatments and processes can be applied to the right fruit at the right time.

Meet Export Market Requirements

The third important point is that there are also different standards and requirements for different export fruit. The packhouse must be able to put citrus fruit of the right type, quality, and size, that has been treated in the right way, into the right packaging material and carton, and ensure that that fruit get sent to the market that it is destined for.

Enable Tracing and Tracking

Lastly, the packhouse process needs to make it possible to track fruit through the flow. In communal packhouses, one must be able to tell one grower's fruit from the fruit of another, and in all packhouses there are traceability requirements that must be provided for.

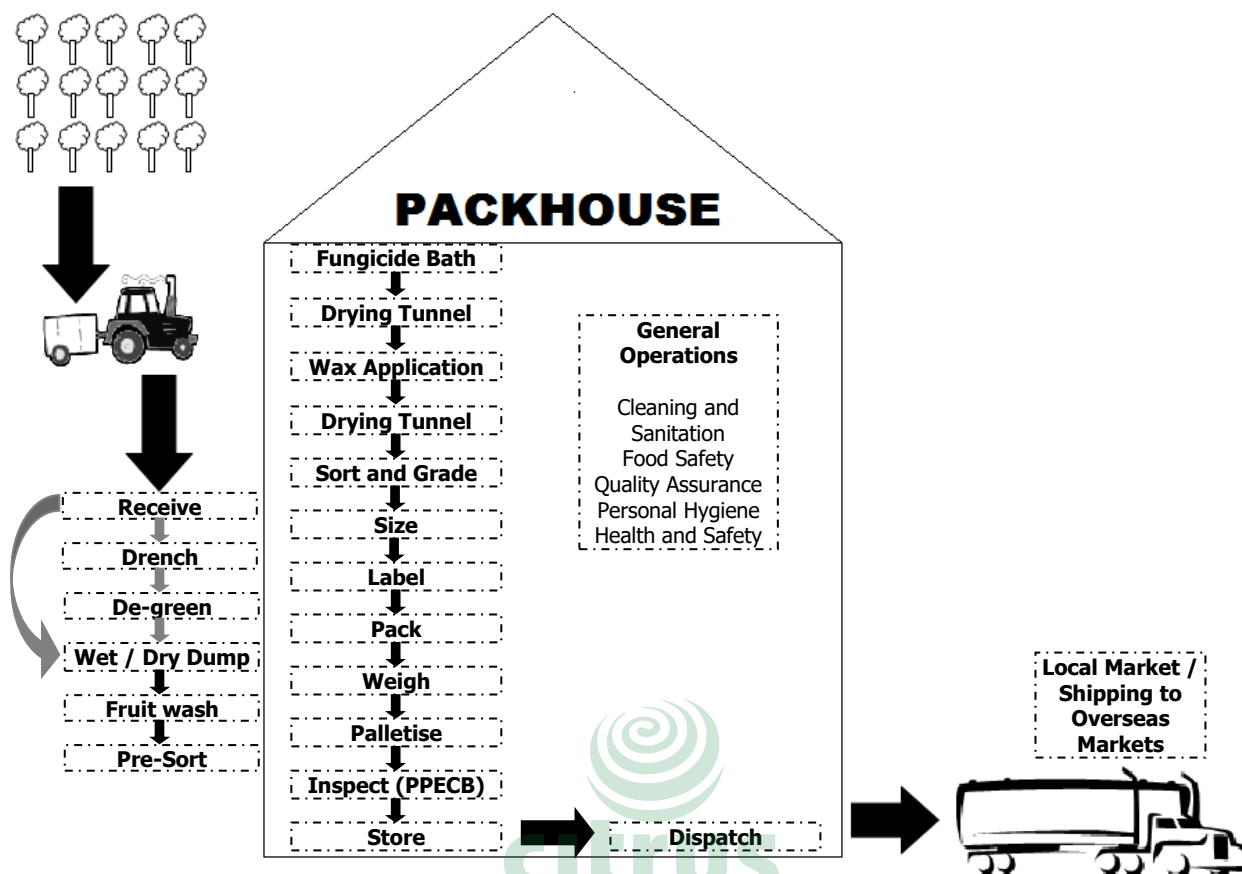
Although this mostly has to do with recordkeeping, it is still an important factor to take into account in the process flow of a packhouse.

Maintain Fruit Quality and Safety

On top of all of this, the quality and safety of the fruit must be maintained and protected right through the process.

Packhouse Flow Model

In this module, we look at a packhouse process flow model. Remember that this is not necessarily how all packhouses work, or even the right or ideal way for a packhouse to work. It is rather a model that meets all these requirements for a packhouse, and that includes all the steps that are taken in a packhouse.



Receive

The first step in the packhouse is to receive the fruit coming from the orchard. Fruit is delivered either in picking trailers, or in wooden or plastic bins.

It is very important to identify at this point who and where the fruit came from, and to note both the production unit code, or PUC, and the orchard number. In communal packhouses, the fruit is also weighed and this weight is recorded next to the growers' name. If the bins are going into degreening, they must be marked with these details and with the fruit colour on arrival.

Drench

Next, if the fruit is going into degreening, it is drenched to remove the field heat, to kill fungal spores and to leave fungicide residues on the fruit to protect it during degreening.

Degreen

Fruit is taken into the degreening rooms, where they are exposed to ethylene gas at a specific concentration and for a certain period of time until they have coloured up to a certain point. Please remember that not all fruit is de-greened.

Dump and Wash

At the wet or dry dump, the fruit is brought into the packhouse process, either after it has been de-greened or directly from the orchard.

At some packhouses, fruit is dumped into water, which is the gentlest way of handling the fruit. This is called a wet dump. In other cases, the fruit is dumped onto a conveyor belt, referred to as dry dumping. The cleaner you get fruit into the fungicide bath, the better, so the fruit is washed in water in the wet dump. In a dry dump, the fruit moves over a set of brushes under nozzles that spray water on them.

Pre-Sort

The clean fruit is now pre-sorted to remove the fruit destined for processing and fruit that is badly infected and that will infect other fruit in the packhouse. Fruit that cannot possibly be exported should not be treated with fungicides and waxed. A mechanical sizer, usually a pony sizer, is used to remove fruit that is too large or too small, and sorters remove the fruit that is too badly scarred, damaged or infected that it cannot be sold on the fresh fruit market. Factory fruit is directed to special bins, from where they are transported to the factory.

Treat – Fungicide Bath

The fruit is now put into a fungicide bath, where it is very important to get the right residue of fungicides on the fruit.

Dry

After the fungicide bath, the fruit must be dried properly before waxing. Any wet fruit going into the wax application system could cause the wax to break down, resulting in erratic wax coverage on the fruit.

Wax

Wax is applied to give the fruit that lovely shine and to prevent moisture loss and maintain the fruit quality during export. Adding some fungicides is also a standard recommendation in the wax application. The fruit is now put through a drying tunnel again to dry the wax on the fruit properly.

Grade and Size

The fruit must now be separated into different sizes and grades, or classes. The local market fruit is taken out and sent on a different packline that leads to where fruit are put into pockets, and export fruit is graded into a number of different classes.

Mechanical graders are used to size the export fruit. Some packhouses use optical sizers that are also able to grade for colour, shape and blemishes.

Where manual grading is used, the best graders are put in place to finally grade the export fruit.

Label

Certain markets require that fruit are labelled. In most packhouses, mechanical fruit labelling is used, but in some cases the packers stick the labels on by hand.

Pack

Export fruit is now packed in the right carton, in the packing pattern that the market requires. The fruit may also be wrapped, if that is what the market wants. In some packhouses automatic packing machines are used. Cartons are then labelled, indicating the variety, grade, size, packing date, packline number, production unit code, and packhouse code.

Weigh

Cartons are now weighed before they are stacked on pallets to make sure that they conform to the minimum weight requirements. This information is also used to make sure that trucks are not overloaded.

Palletise

The packed cartons are stacked neatly on pallets, with the stacking pattern depending on the type of carton. Corner pieces are put in place and strapping is used to stabilise and secure the pallets. For open-top display cartons, securing sheets and pallet caps are also used.

Inspect (PPECB)

The PPECB inspectors will now inspect the packed and palletised fruit to make sure that it complies with the minimum requirements for export.

Store

After being palletised and inspected, the fruit is stored either in a cold room, or in separate area in the packhouse. At some packhouses, the pallets of fruit are packed directly into shipping containers to save harbour handling costs.

Dispatch

From here the pallets are loaded onto trucks for dispatch to the harbour. Alternatively, the pallets are loaded into containers, which are either transported on trucks or by rail.

Other Packhouse Tasks

This is the end of the process flow in the packhouse, but there are various other functions that must be applied generally.

Packhouse Sanitation

The packhouse must be cleaned and sanitised daily – remember that you are working with a perishable product that is vulnerable to infection.

Quality Control

It is very important that food safety and quality requirements are strictly adhered to. Throughout the process, there should be sample checks to ensure that grading and sizing are being done correctly, that fruit is not injured during the packing process, and that the right fruit is ending up in the right place.

Personal Hygiene

Every person that works in the packhouse must be aware of the personal hygiene requirements for working with a perishable product.

Every worker must wear protective clothing, and specifically a hair covering, overalls and, in some cases, gloves. The worker must keep his or her protective clothing clean and neat at all times, and make sure that it is whole and in a good condition.

Workers must wash their hands regularly, and their nails must be kept short so that they will not injure the fruit. Workers should not have any open injuries or sores – these must be treated and covered with plaster or bandages.

No eating, drinking or smoking is allowed inside a packhouse.

Workers must also be aware of all the possible dangers that the machinery, equipment and chemicals used in the packhouse, pose to their own health and safety.

active learning

Watch the DVD clips, read through the learning material and do workplace research to gather the knowledge and information to complete the assignments below.

Activity 1 – Poster Design

Use poster paper to trace the outline picture of a person. Now find or draw pictures of all the protective clothing and gear that should be worn, also showing how it should be worn, to ensure staff safety and hygiene.

Activity 2 – Workplace Flowchart Presentation

Draw a flowchart to show the sequence of events in your specific packhouse. Be creative and add as many pictures and information as possible in order to explain the process flow.

Now present you flow chart to the rest of your class or your colleagues during a 5-10 minutes multimedia presentation.



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Copy your drawing below and add keynotes.



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