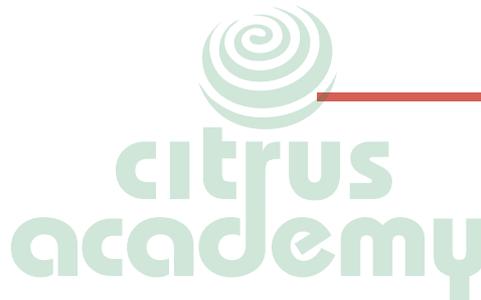

Citrus Packing

6 Palletisation

Learner Guide



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1st edition 2011 | 2nd edition 2017

This module forms part of the Citrus Postharvest Series. It has been repackaged to address the specific need of training permanent and seasonal citrus packhouse workers.

The content of this learner guide is based on audio-visual material produced by the Citrus Academy.

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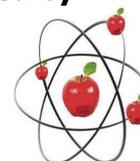
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information

Reference

More information on how cartons should be palletized can be found in the Packing Material Guidelines published by the Citrus Cold Chain Forum.

Introduction

After being packed, citrus fruit is ready to take the next critical step in the journey to the market. The fruit is now clean, treated, waxed, sorted, and packed in cartons, and has had a lot of value added to it. We must be very careful how we handle these cartons from this point on.

The first important task is to stack the packed cartons neatly and securely on pallets so that they will not be damaged during the journey of thousands and thousands of miles that lies ahead.

We must make the product look good and at the same time stay within the specifications laid down by the different local and overseas authorities.

On arrival on the world market, the buyers of our fruit must immediately get the impression that we are supplying them with cared-for products. In the citrus export business there is enough risks that cannot be controlled, like road accidents, stormy seas and so on. We must make certain that we control and eliminate those risks that we can.

Pallets

Before stacking a pallet, ensure that the pallet complies with the pallet specification. Poor quality pallets can damage the cartons and fruit.

Pallets must be smooth, with no wood splinters, nails or screws that can catch on or stick into the cartons and fruit. Check that there is no fungal growth on the wood, because this can contaminate the fruit during the journey ahead.

Also make sure that the pallet is sturdy. The top deck slats must all be of the same thickness – slats of various thicknesses will damage the cartons. Every pallet must also have an ISPM 15 stamp on. This stamp shows that the pallet has been treated and approved for use.

Packaging Material Guidelines

Specifications for pallets used for exporting citrus can be found in the Packaging Material Guidelines document, published by the CRI.

This document not only states the specifications for pallets, but also sets out palletisation protocols for every type of carton. It is very important that you must know the protocol for every type of carton that you work with.

This document shows the stacking pattern for each type of carton and how the cartons should be stabilised on the pallet. It also contains handy tables for standard and high-cube pallets, that show for each carton type the number of cartons that there should be in each layer, the number of layers on the pallet, and the number of cartons that there must be on a pallet. It also tells you where the pallet should be strapped, and where securing sheets should be placed.

Please remember that these protocols are regularly updated, and you must make sure that you have the latest guidelines in hand.

Stacking Frames

A metal frame is used to help with stacking cartons on the pallet. The frame is used to make sure that cartons stand neatly on top of each other and that the stack is straight and do not lean to one side or the other.

In smaller packhouses, these frames are placed on the packhouse floor. In large packhouses, these frames are part of hydraulic palletising stations. The hydraulic stations allow the workers who are stacking the cartons on the pallets to work at hip level all the time. Frames should always be clean and well maintained with no protruding pieces of metal, welding, nuts or bolts that can damage the cartons.

The pallet is placed in the bottom of the frame, and cartons are then stacked on it in the prescribed pattern inside the frame. When the required height has been reached, the pallet is carefully removed from the frame and the cartons are secured with corner pieces and horizontal strapping.

Pallet Stacking Practices

Before you start stacking cartons on the pallet, there are a few general rules that you need to know. All the cartons we use for exporting citrus have ventilation holes, which are there to allow air to flow through the carton when it is cooled. There are ventilation holes in the bottom and the sides of the carton.

On ships and in containers, cooling is done vertically, which means that the air must be able to move vertically through the pallet. If you stack the bottom layer of cartons so that their ventilation holes are blocked by pallet slats, air will not be able to get in and the fruit will not be cooled quickly, which may cause waste.

You must therefore make sure that the ventilation holes in the bottom of the first layer of cartons correspond with the gaps between the pallet slats. You must also make sure that the cartons in the bottom layer are always positioned so that the four corners of each carton rest squarely on wood. As we have already said, the Packaging Material Guidelines gives protocols for the palletisation of different types of cartons that is used for exporting citrus.

The carton types that are used most often are full telescopic cartons and open-top display cartons, and we will look at the stacking procedures for these cartons in detail, so that you can understand how the protocols are applied.

Stacking A15C Cartons

The first one we look at is the A15C full telescopic carton, used mainly for exporting oranges and lemons.

While stacking the pallets, make sure that the labels on all the cartons are on the outside and visible on the same side of the pallet. These end panels are referred to as the 'business-end' of the cartons.

To stack A15C telescopic cartons on a pallet, place three cartons lengthwise on the one long side of the pallet, and another three next to them. Then place four cartons crosswise next to these, to complete the bottom layer of the pallet load. Remember not to place the cartons so that their ventilation holes are blocked by the pallet slats.

Place two more layers of cartons exactly like the first layer. You now have three layers, stacked in the same pattern. Stacking the bottom three layers in the same pattern with cartons on top of each other, helps to distribute the weight of the stack and ensures that the bottom cartons won't collapse. This is called column stacking.

On the fourth layer, stack the cartons opposite to the three layers below. This means that you will place lengthwise cartons on top of crosswise cartons, and the other way around.

The cartons on the fifth and seventh layers must now again be stacked like layers 1 to 3. Layer number 6 must be stacked in the same pattern as the fourth layer. The stacking for layers 4 to 7 is called brick stacking.

You have now stacked a standard pallet of A15C cartons with seven layers. For a high-cube pallet, an eighth layer is added in the same pattern as the fourth and sixth layers.

Stacking T64 Cartons

The second carton we look at is the T64 carton that is 170 millimetre high. This full telescopic carton is used for grapefruit exported to Japan.

The palletisation and stacking pattern principles are the same as for the A15C cartons. Stack three cartons crosswise on the one long side of the pallet. Then place two cartons lengthwise next to these to complete the bottom layer of the pallet load.

The bottom four layers are column stacked in this way, and from layers 5 to 11, the brick stacked pattern is used, which gives you a standard pallet. A high-cube pallet is stacked 13 layers high, with layers 5 to 13 brick stacked.

Stacking Open-Top Display Cartons

The third type of carton we use is the open-top display carton. These cartons are mainly used for exporting fruit to supermarkets in the United Kingdom. Open-top display cartons are designed to fit on top of each other with locking tabs and slots.

To stack open-top display cartons on a pallet, stack three cartons crosswise on one long side of the pallet. Now add two cartons lengthwise next to them to complete the bottom layer. You must make sure that the ventilation holes in the bottom of the carton are not blocked by pallet slats, and remember that the carton labels, or business ends, must be on the outside.

When the layer is complete, put a securing sheet on top of the cartons on the first layer. Securing sheets are manufactured from corrugated board paper. Make sure the locking tabs correspond with the slots in the securing sheets. Now stack the cartons on the second layer in the same pattern as the first, making sure that the locking tabs fit into each other and that the cartons are secure on top of those below. Place another securing sheet on top, and add layer three.

Repeat this procedure with the same stacking pattern for all the layers, meaning that you are using column stacking. Stack the cartons in this way until you reach the required number of layers. The securing sheets are used to spread the weight of the cartons stacked on top and to ensure that the columns do not open up.

Open-top display cartons of various heights are used for different varieties and fruit sizes. For full details regarding the various sizes of open-top display cartons, the number of layers on a pallet for conventional vessels and high-cube containers, and the number of securing sheets and straps that must be used per pallet, please see the palletisation protocol section of the Packaging Material Guidelines.

Pallet Caps

To protect the fruit in the top layer of a pallet of open-top display cartons, a pallet cap is placed on the top layer. A pallet cap is a corrugated board paper 'lid' that fits neatly over the five cartons in the top layers.

Bulk bins used for exporting industrial grade fruit are stacked two high, and the top bulk bin is also covered with a pallet cap.

Securing and Stabilising Pallets

Corner Pieces

The stabilisation of the cartons on a pallet is extremely important. Pallet loads must be stabilised with four laminated paper corner pieces and horizontal straps.

Corner pieces not only protect the cartons and the fruit, but also ensure that the pallets reach the overseas markets in a neat, square and stable condition.

The Packaging Material Guidelines shows the requirements for the corner pieces that must be used on standard and high-cube pallets.

Strapping

The corner pieces are placed on top of the pallet, catching the bottom of the cartons on the first layer. The first strap is placed in the middle of the cartons stacked in the bottom layer. The strapping is tightened, sealed and cut with special tools.

The strapping that is used on the rest of the pallet depends on the carton type that is used, and the number of layers. The general rules are that the bottom three layers of A15C full telescopic and all open-top display cartons must always be strapped and the bottom four layers of the T64 cartons.

In addition, the top layer of all pallets must be strapped, for all carton types. More straps are placed between the third or fourth and the top layers.

You can see where these straps must go in the Packaging Material Guidelines, where it is indicated as for example 1, 2, 3, 6, 9 and 12, being the numbers of the layers that must be strapped.

Pallet Marking

After stacking and wrapping the pallet, a barcode sticker is stuck onto the pallet. This EDI, or Electronic Data Interchange, sticker helps with tracking the pallet on the rest of its journey.

This system is currently being developed by the PPECB in conjunction with the DAFF, and role players in the South African citrus industry. The aim is to develop an EDI tag that can be placed on every pallet so that a pallet can be tracked right from the packhouse through every link in the chain.

At the packhouse a small barcoded EDI label is attached to the pallet. This barcode is registered on an international database. Anyone that scans the barcode will immediately be able to see where and when this pallet was packed, where and when it was stored and cooled, and how it was shipped.

In some packhouses the system is already in place, and is proving beneficial to the packhouse and producer.

Pallet Inspection

Before pallet loads can be exported fruit must be inspected and approved by PPECB representatives. For this purpose two spare cartons are placed on top of every stacked pallet.

When the PPECB inspector arrives, the pallet is broken down and the inspector selects two cartons for inspection. The inspector then verifies that the load complies with the minimum export standards.

The pallet is then re-stacked, using the two spare cartons to replace those that were removed for inspection. Remember that the pallet must again be stacked and secured in the manner we discussed before. This inspection procedure is prescribed by law, and every single pallet must be inspected in this way.

Preparing Pallets for Transport

After the pallets have been inspected and approved, they are stored, ready to be loaded for transport.

Wrapping pallets with black plastic is essential as the pallets are transported on flatbed or tautliners trucks. Over long distances by road, serious scuffing of cartons occur, caused when the outside faces of the pallet loads rub against those of the pallets next to it.

By the time the load arrives at its destination, the cartons will not look good any longer and may be damaged. To prevent this from happening, you must drape plastic sheeting from the top to the bottom around three sides of every second pallet.

The plastic must be taped at the top of the pallet to prevent the plastic from sliding own. Only every second pallet has to be wrapped.

On a flatbed truck, the pallets are covered with a tarpaulin after being loaded. Liner board, which is single face corrugated board, must be placed on top of the load, between the cartons and the tarpaulin. The liner board absorbs that moisture from the fruit, and prevents the top layer of cartons from dampening and weakening.

Conclusion

Incorrect palletisation can cause huge financial losses for the packhouse and the grower.

When a load of citrus arrives in an overseas market and is off-loaded at the harbour, there is nothing that shows how well a product has been cared for, than the first impression given when seeing neatly and correctly packed and stacked pallets and cartons.

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 – Group Activity

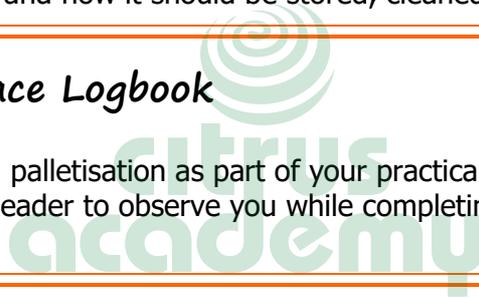
Make a sketch indicating – with the minimum amount of writing – how to stack and secure a pallet of T64 cartons in high-cube formation. Swap sketches within your group and stack a pallet using only the sketch. Discuss the results and shortcomings afterwards.

Activity 2 – Table

Make a table with details of all the equipment needed to secure cartons on a pallet, including the name and description of every piece of equipment, an explanation of how it should be used with attention of health and safety, and how it should be stored, cleaned and maintained.

Activity 3 – Workplace Logbook

You have to complete practical palletisation as part of your practical learning. Please ask your workplace supervisor or team leader to observe you while completing these duties and to sign off your logbook.



Activity 1 – Group Activity

Make a sketch indicating – with the minimum amount of writing – how to stack and secure a pallet of T64 cartons in high-cube formation. Swap sketches within your group and stack a pallet using only the sketch. Discuss the results and shortcomings afterwards.



