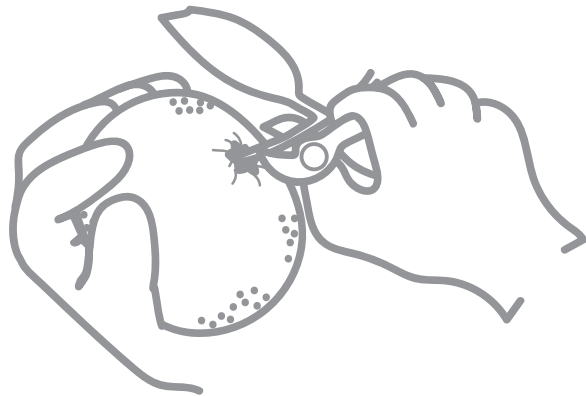


Australian fresh citrus harvest handbook



English

Second edition 2021

Australian fresh citrus harvest handbook

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (April 2021). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user's independent advisor. Recognising that some of the information in this document is provided by third parties, the State of New South Wales, the author and the publisher take no responsibility for the accuracy, currency, reliability and correctness of any information included in the document provided by third parties.

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Introduction

Harvesting citrus requires special care to ensure that consumers receive a safe, high quality fruit and that pickers are kept safe in the process.

Citrus can be easily bruised or damaged by mishandling. This causes fruit blemish or rotting during transport to the market. Harvesting citrus involves working outdoors, around machinery and climbing ladders.

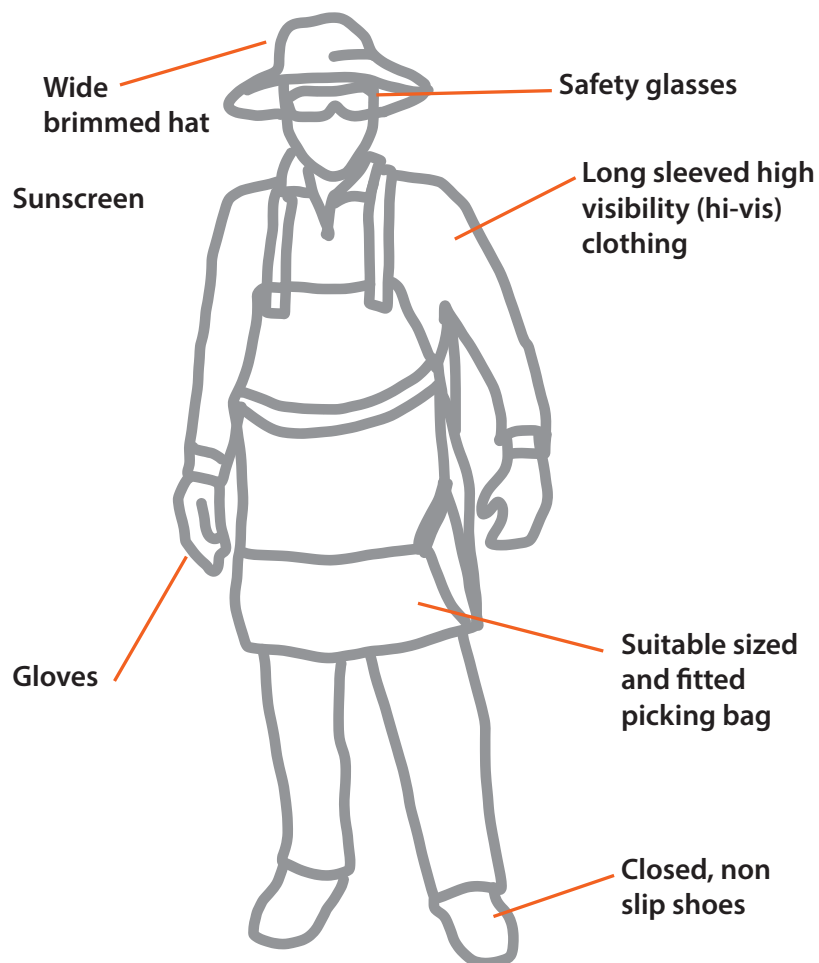
This booklet will provide the relevant information so you can successfully harvest citrus in the correct and safe manner.

To help improve this guide please provide your suggestions and feedback to Steven Falivene:
Phone 0427 208 611
Email steven.falivene@dpi.nsw.gov.au

Preparation

Clothes, bags and gloves

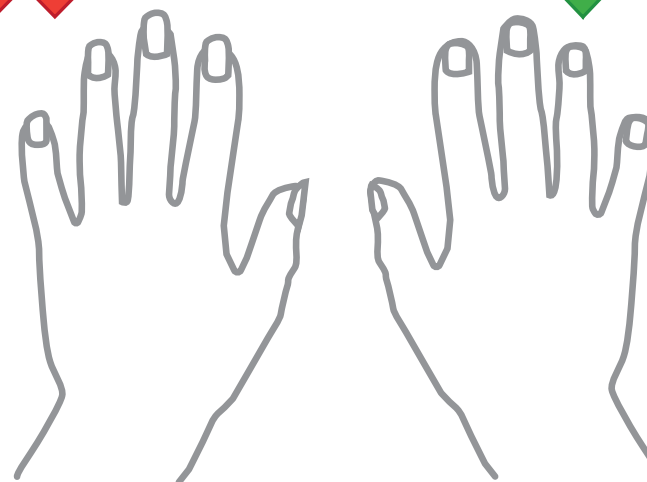
Wear appropriate clothing



Always wear clean gloves when handling fruit. Replace gloves when worn or broken and do not take to other farms. Gloves are either provided by the employer or can be purchased from an agricultural store.



Keep fingernails short.



Farm biosecurity

To help stop the spread of pests and diseases, follow the biosecurity rules of the farm.

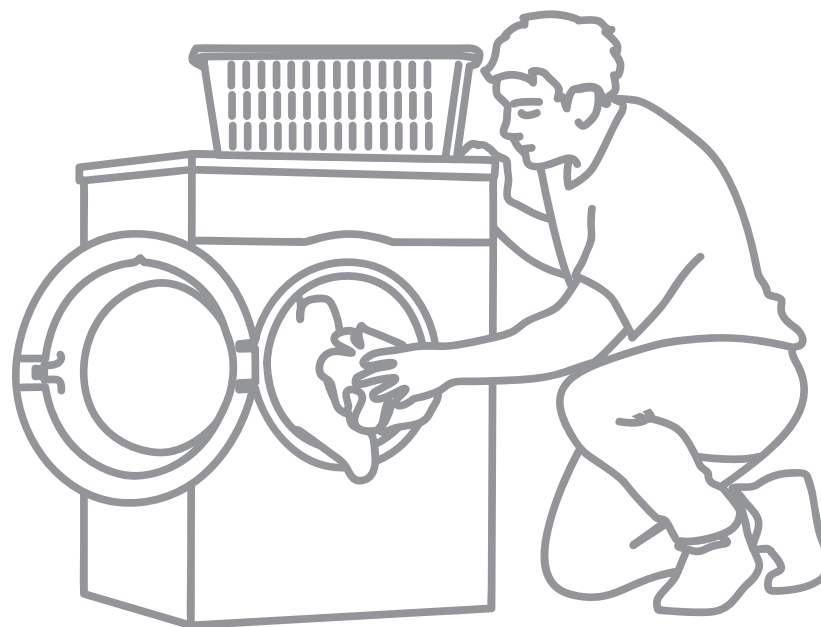
- Always park your car in the parking area and follow all signs
- Wear clean clothes every day
- Don't forget to regularly wash your hat!
- Make sure your shoes are clean of dirt and weed seeds



- Don't bring fruit onto the property
- Don't take picking equipment home
- Report anything unusual to your supervisor

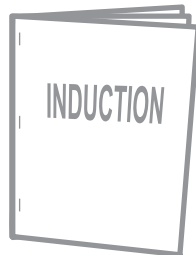
When you move between farms:

- Clean your car and equipment
- Check shoes/hats are clean of dirt and seeds
- Dispose of all fruit and vegetables correctly before moving to a new area
- Tell your employer where you last worked



On the farm

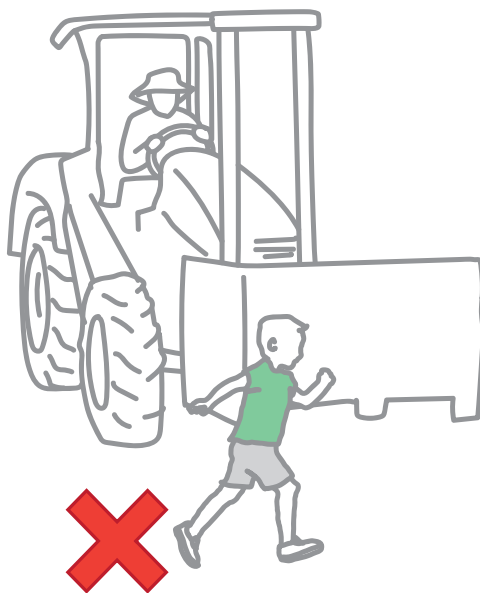
Check with your supervisor for any special requirements to work in the orchard. This is normally in a farm induction document and includes information about:



- specific safety requirements (e.g. Hi-vis clothing)
- reporting and notifying workplace incidents
- how to get first aid help
- emergency procedures
- behaviour and hygiene policy
- car parking areas
- speed limits.

No children or pets allowed on the farm

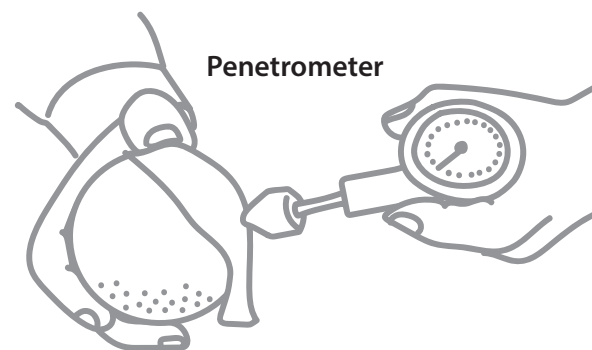
- Children are at great danger from tractors and machinery.



When you start picking

Check with your supervisor each morning when and where to harvest. Conditions can change overnight and during the day.

- Only pick rows allocated to you. When finished, ask for further instruction.
- It is best to start picking when the dew on trees has dried and favourable weather conditions are present. This is sometimes not until between 10am - 12 pm.
- Harvest can stop at any time due to changing weather conditions.
- On some days harvest might not occur (i.e. too cold, heavy dew/fog or rain).
- Orchardists often use a penetrometer to check if fruit is ready to be harvested.



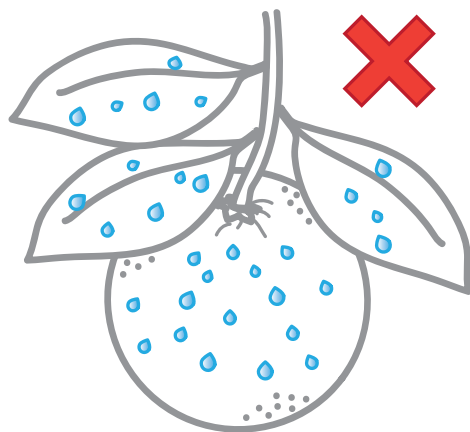
- Harvest can start early morning in summer if the dew has dried on the tree.



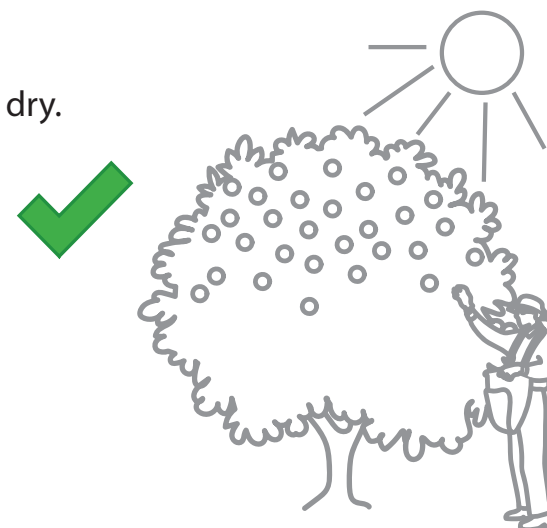
Fruit is damaged or weakened when harvested in unfavourable conditions (oleocellosis, p. 60).
Do not harvest oranges when it is wet (rain or dew).

If the fruit is wet, report it to your supervisor.

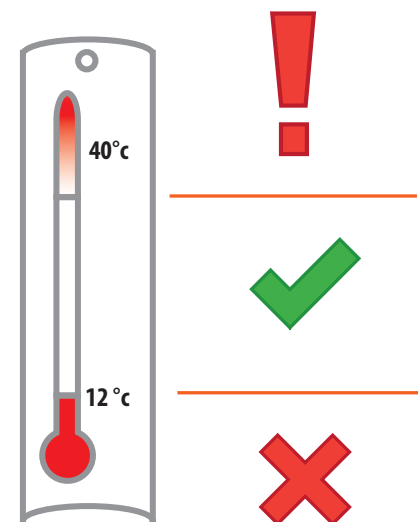
Some snip picked (p. 20) mandarin varieties can be harvested when wet, check with your supervisor.



Fruit must be dry.



Do not harvest if the temperature is less than 12 °C. In summer, start early in the morning to avoid the heat of the day, and drink lots of water.



Picking equipment

Picking bags

Fruit must be picked into **picking bags**. Bags should be in good condition and fitted and worn correctly.

Bags come in two sizes: 1 case (~16kg) and 1 ½ case (~22kg). Use a bag that suits your carrying capacity and do not fill over your carrying capacity.



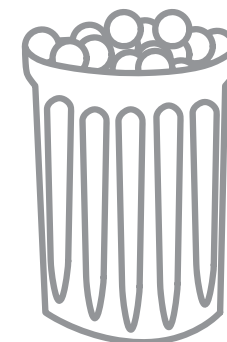
Orchard biosecurity

Insects can fall into the bag. Shake out picking bags at the end of day or before moving onto a new block or farm.



Do not use buckets

Do not pick into buckets or garbage bins. Fruit can be damaged (p. 60) when thrown into buckets or when buckets are unloaded into bins.

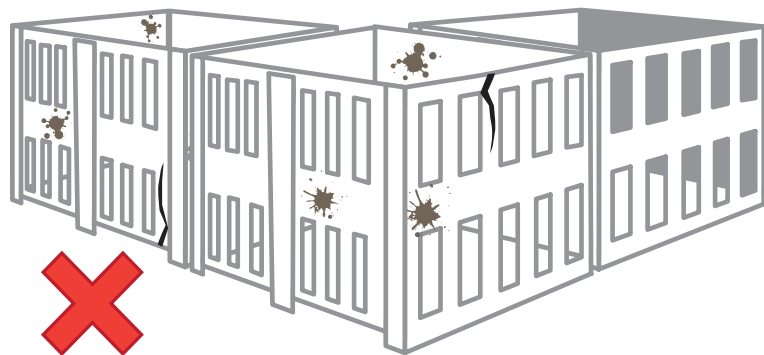
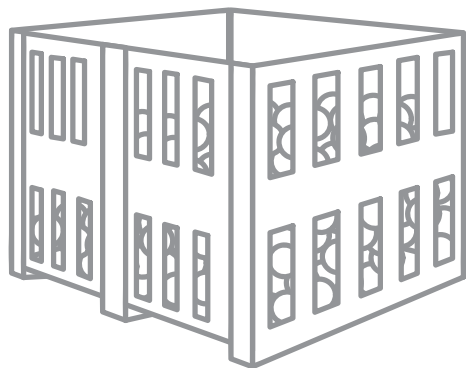


Bins

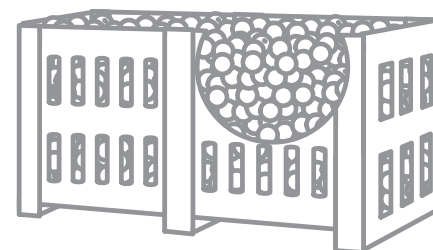
Fruit are unloaded from picking bags into plastic bins.

Remove any seed thorns, insects, sticks, mud, rubbish, pieces of old or damaged fruit etc.

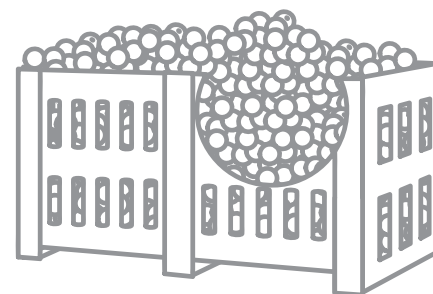
Put aside and report any broken, very dirty or chemically contaminated bins to your supervisor.



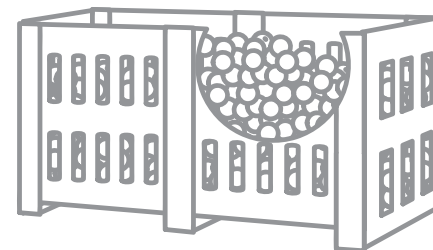
Fill bins properly



Fruit should just reach the top of the bin (water level).



Do not overfill bins.

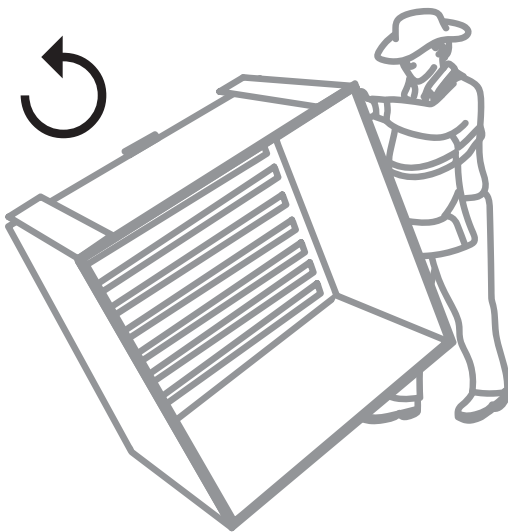


Do not under fill bins.

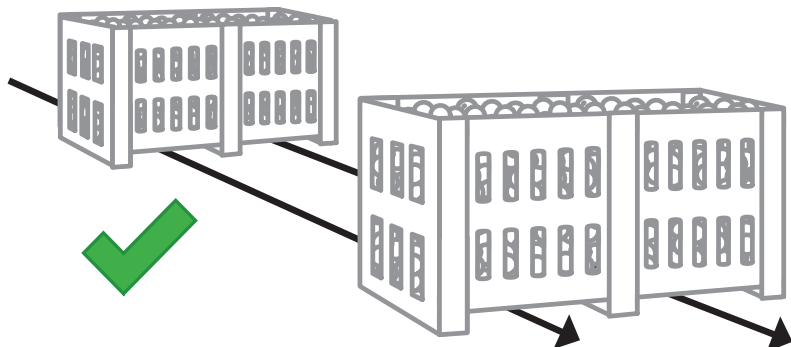
Moving empty bins

Ask for a forklift if you need to move bins a considerable distance. Only attempt to move bins if it is within your safe lifting limit, if not, ask for help.

Rolling a bin along its side can sometimes be easier than dragging.

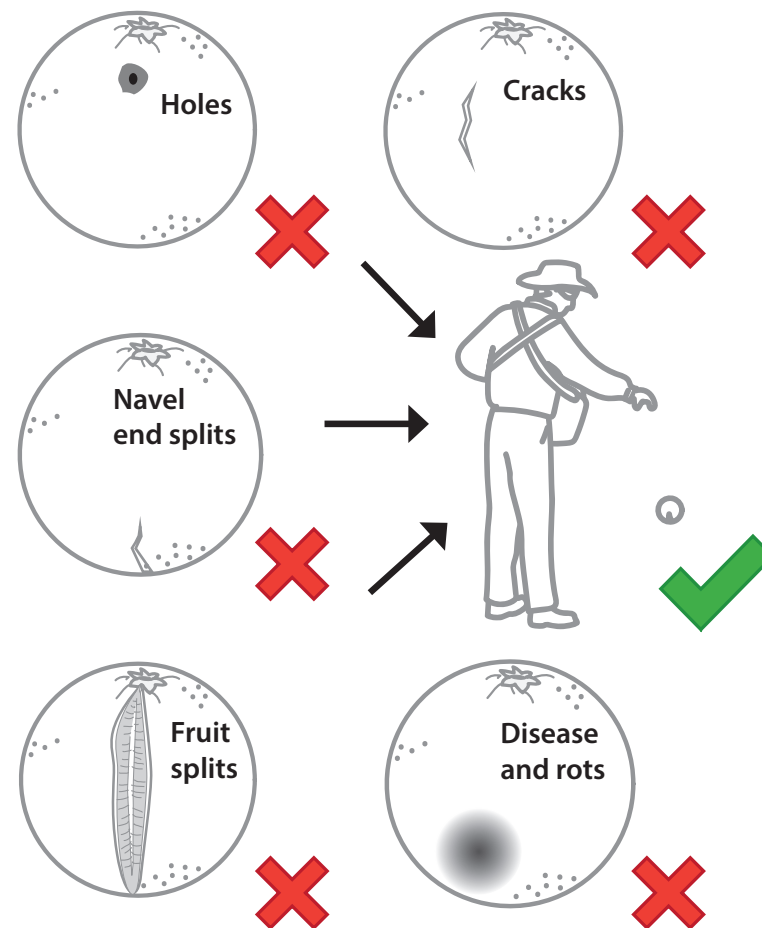


Ensure bin forklift holes are facing along the row.



Picking practices

Fruit with broken or opened skin must be thrown onto the ground.

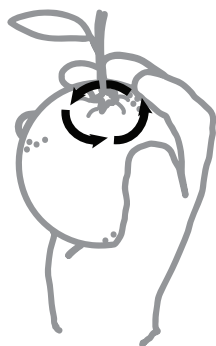


Snap picking

This is mostly used with oranges, grapefruit, lemons, limes and some mandarins.

Aim to leave button on the top of the fruit.

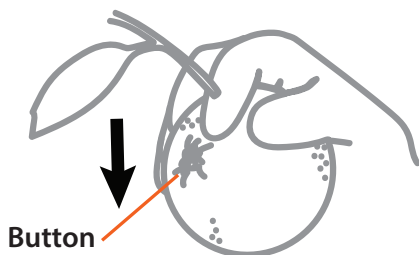
TWIST. Hold fruit firmly, but do not squeeze fruit too hard (fruit bruising p. 60).



TILT to horizontal position.



SNAP sharply at right angles to the stem by pulling quickly downwards.

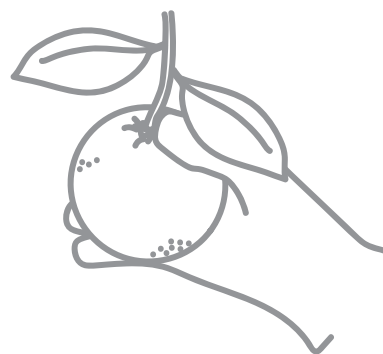


The twist, tilt and snap action is done in one quick action.

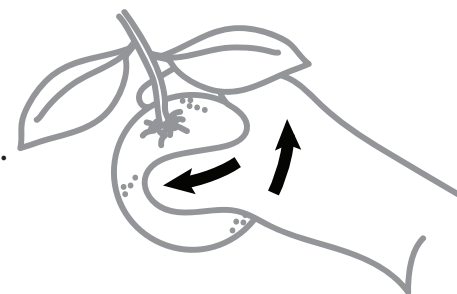
Cradle snap picking

Cradle snap picking is a slightly faster picking method that requires extra skill and practice to avoid pulling the buttons off fruit. This method has less finger bruising problems, but is best tried after experience.

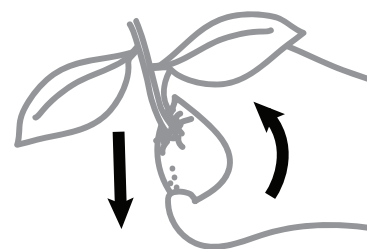
Cradle the back of the fruit in the palm of your hand.



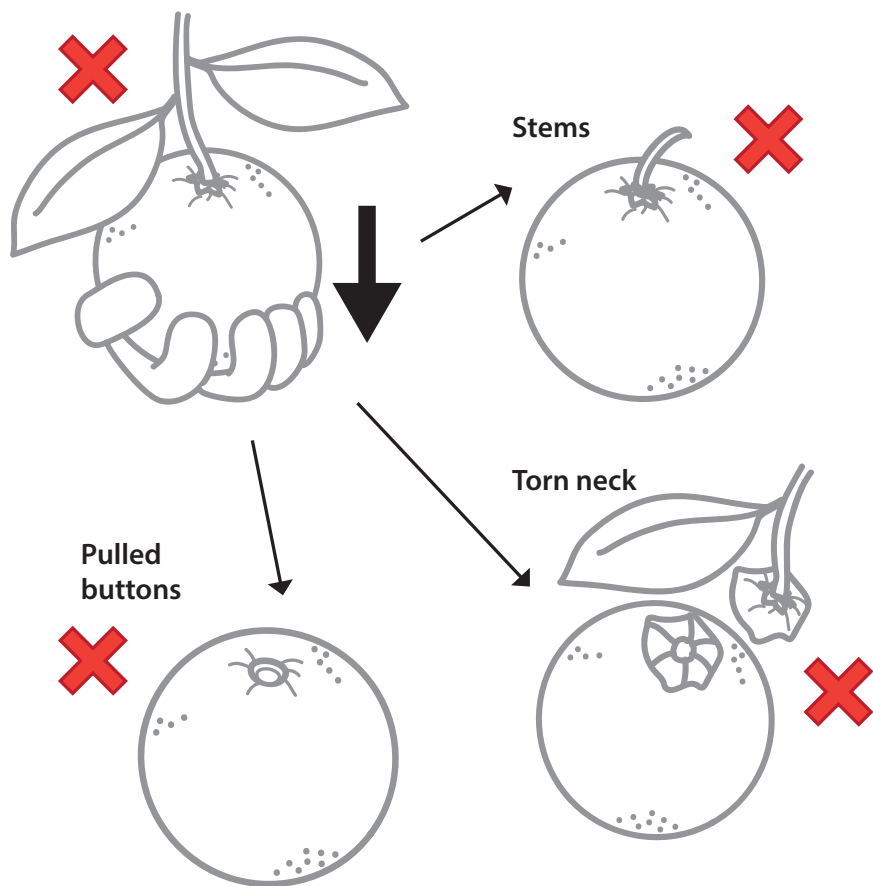
Tilt and twist the fruit.



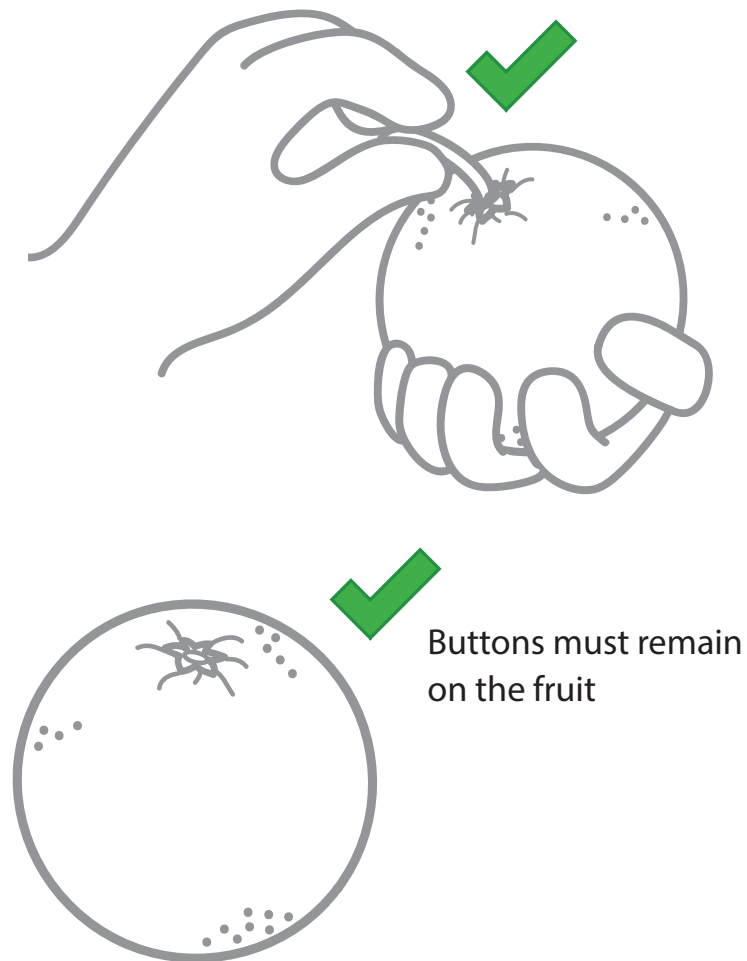
Continue to tilt and twist the fruit until in a horizontal position then snap off from the stem.



Inadequately twisting or tilting fruit, or snapping too slowly, can result in torn necks, stems and pulled buttons.

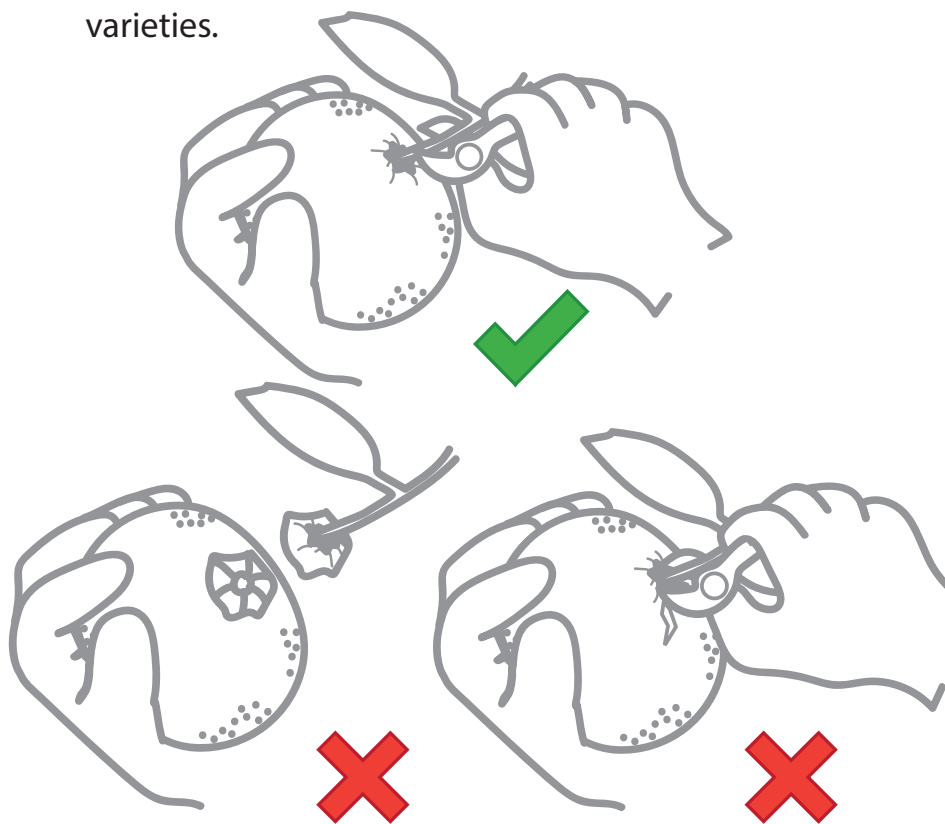


Twist, tilt and pull off the stem if it is left on the fruit.



Single snip picking

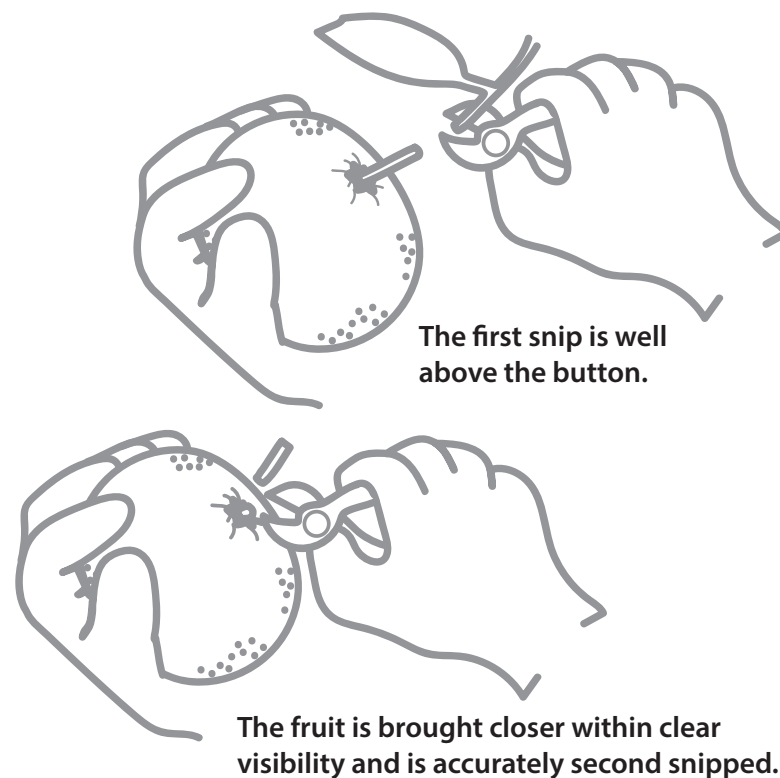
Most mandarins are snip (clip) picked. Check with your supervisor if this is required for other varieties.



Do not to tear, scrape or cut fruit. Do not press down hard on the button when snipping.

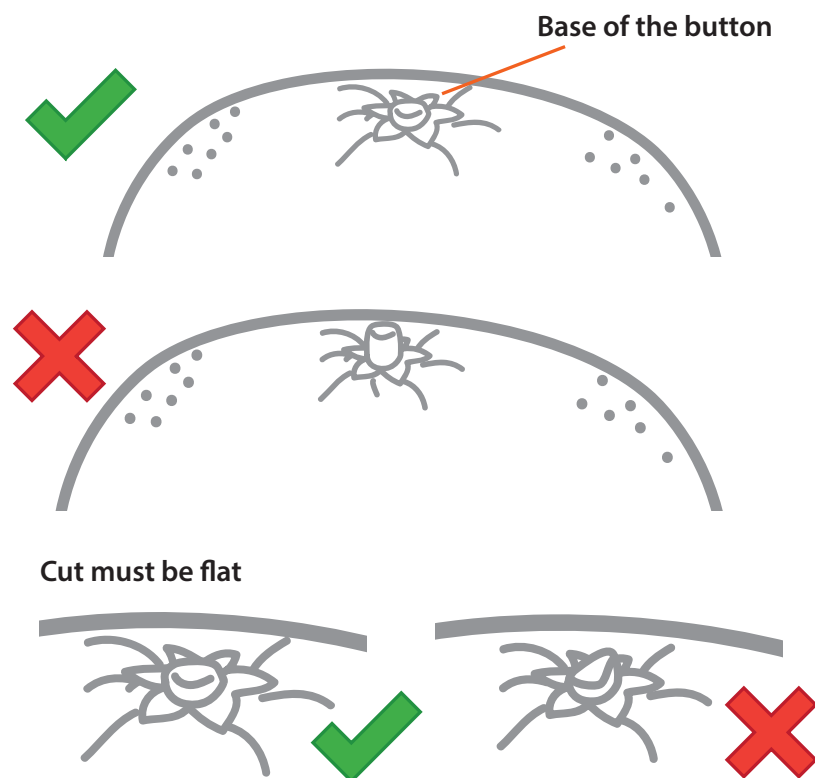
Double snip picking

Double snipping minimises fruit damage and produces a more consistent snip finish (p. 22). Use this method when first learning how to snip pick and/or when fruits are not within comfortable reach. Some orchards require **all** fruit to be double snipped.



Snip finish

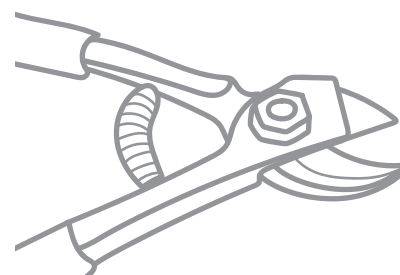
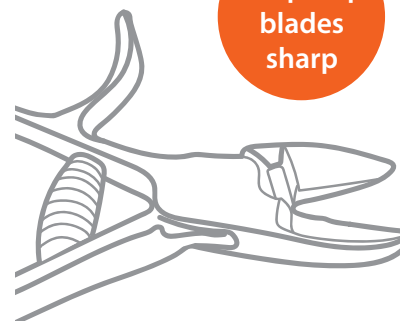
Stems must be short, flat, and cut as low as possible from the base of the button. Long stems can damage other fruit. However, snips should not be pushed down on the button when snipping because it can cut the button or fruit.



Types of snipping tools



Keep snip
blades
sharp

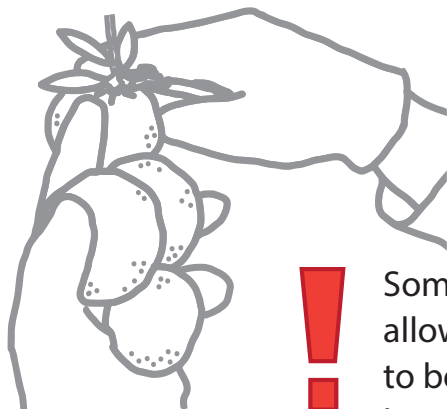


Narrow, slightly curved and blunt end snips are very sharp and easily cut thick stems, but be careful as they can also damage fruit and cut the user.

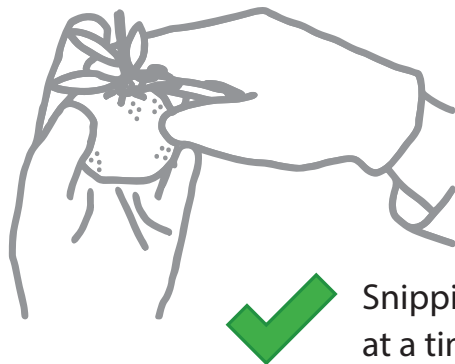
Semi blunt end snips are relatively sharp, can potentially cause less fruit damage than narrow nose snips, and more easily cut thicker stems than blunt end snips.

Blunt end narrow nose snips cause least fruit damage, but need slightly more effort to cut thick stemmed varieties. Good for beginners.

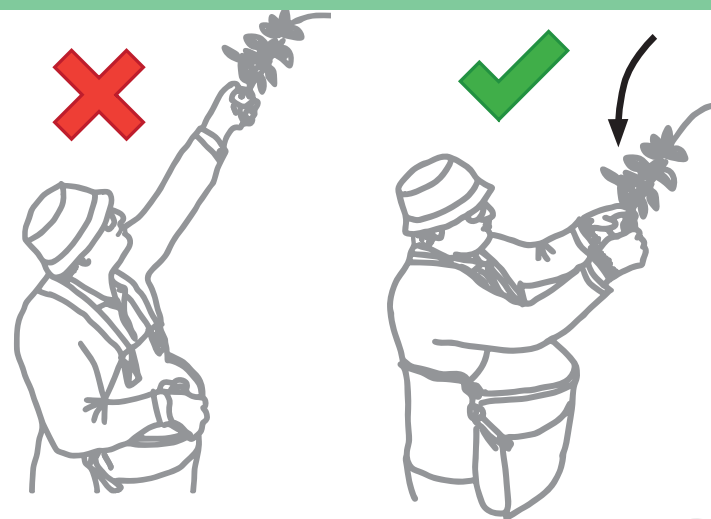
The employer can provide snips or they can be purchased from agriculture supply stores.



Some orchards might not allow multiple mandarins to be snipped in one hand, because it can cause fruit damage.

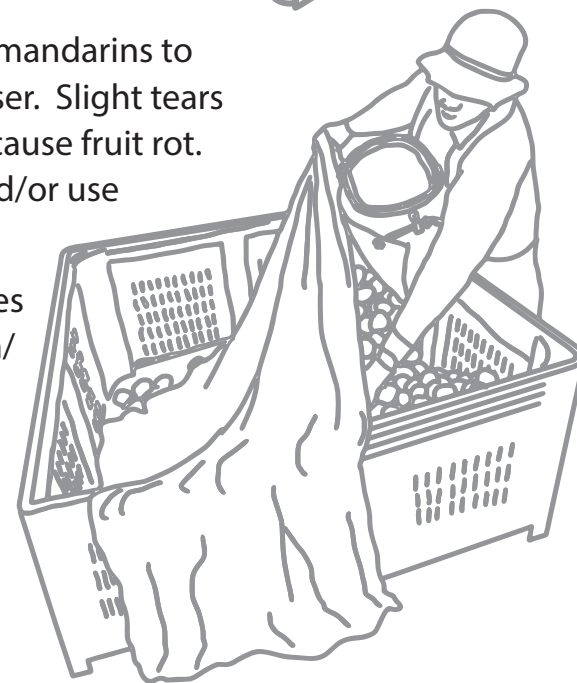


Snipping one mandarin at a time is best.



Do not pull on mandarins to bring them closer. Slight tears can occur and cause fruit rot. Move closer and/or use a double snip.

In warm climates or during warm/hot days, fruit might need to be covered to protect it from sunburn.



Picking using bags

Citrus fruit can be damaged or bruise easily (oleocellosis p. 60); handle fruit carefully.

Step 1 and 2

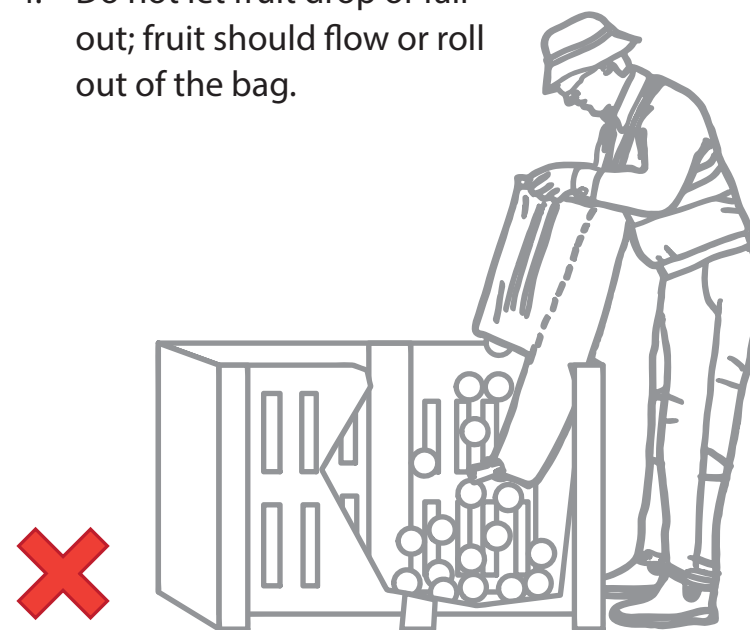


Step 3



Place fruit gently into bins

1. Bend over to place the filled bag onto the bottom of the bin, or onto the fruit in the bin.
2. When the bag is supported, unhook the straps.
3. Lift the bag up slowly to allow the fruit to roll out of the bag (use hand and leg support if required, p. 28).
4. Do not let fruit drop or fall out; fruit should flow or roll out of the bag.



Tip

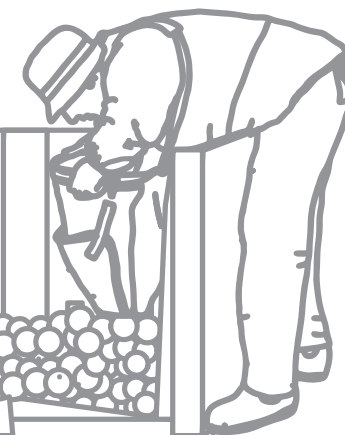
To help reduce the load on your back when unloading fruit you can hold onto the bin and bend your arms and legs as you lower the bag into the bin and raise the bag to unload fruit. Take the load off your back and onto your arms and legs. Unloading from the edge of the bin can sometime be easier – find what suits you best.



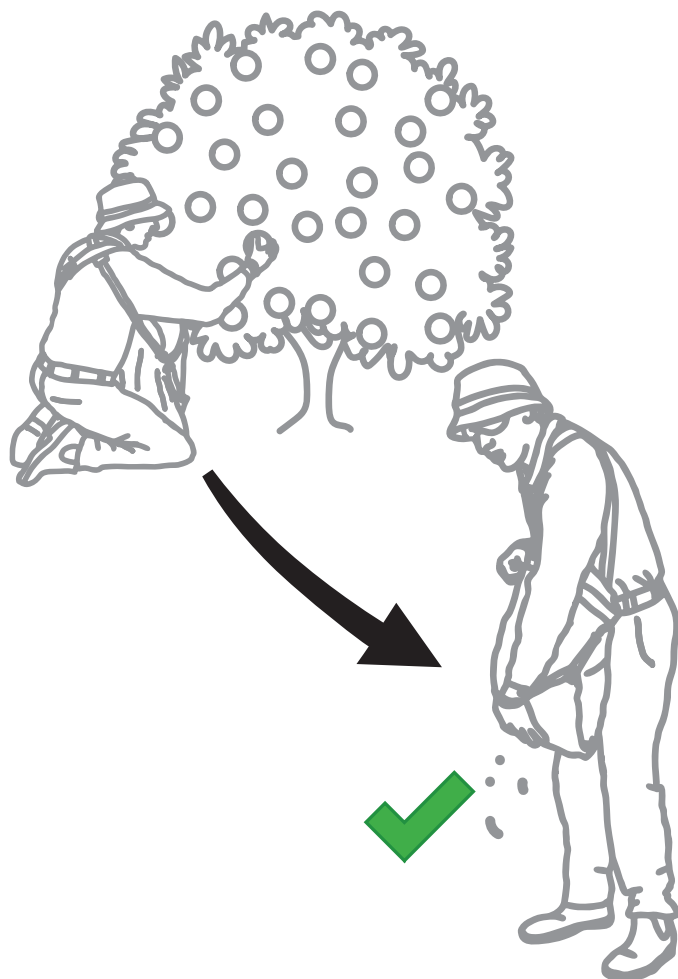
Do not overfill bags.



Do not place filled bags of fruit on the edge of the bin, place it directly and carefully into the bin (p. 26).



When picking small trees, brush the underside of the bag if it touches the ground to remove seed thorns and other debris.

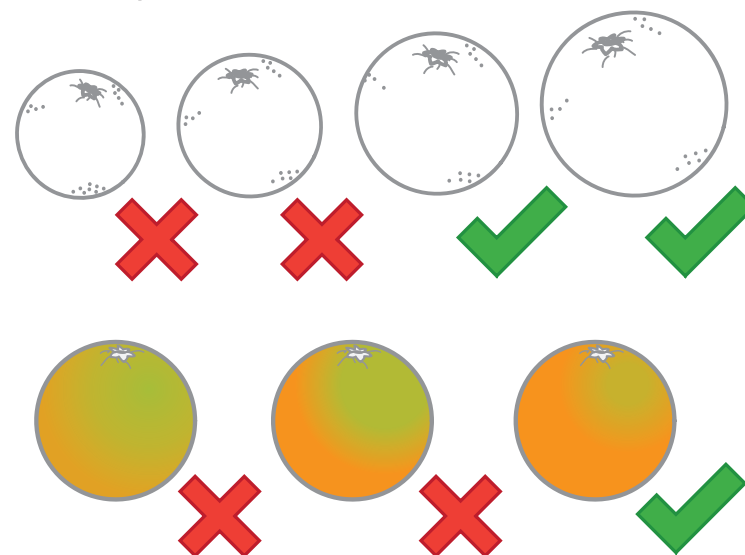


Select picking

Sometimes fruit is picked according to colour (rind maturity) or size to better meet market requirements.

If select picking, your supervisor will demonstrate the fruit to pick and not to pick according to size and/or colour specifications.

For example:



Select picking is slower than strip picking (picking the whole tree at once).

Harvest practices

Pick all fruit before moving to the next tree.

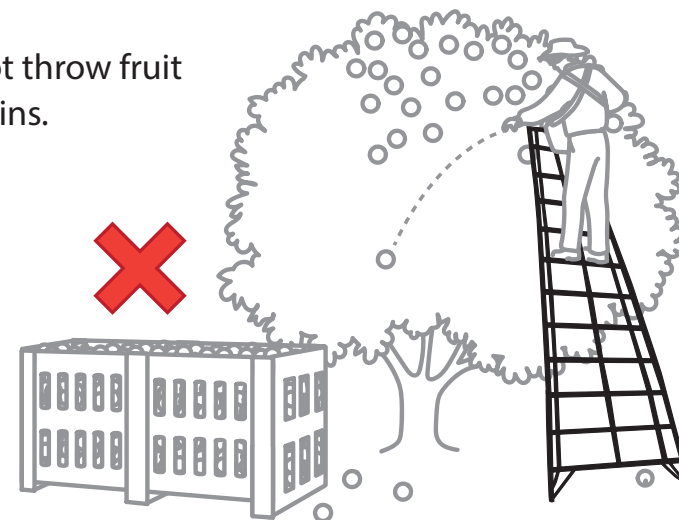


Never pick fruit off the ground.

Do not pick up dropped fruit

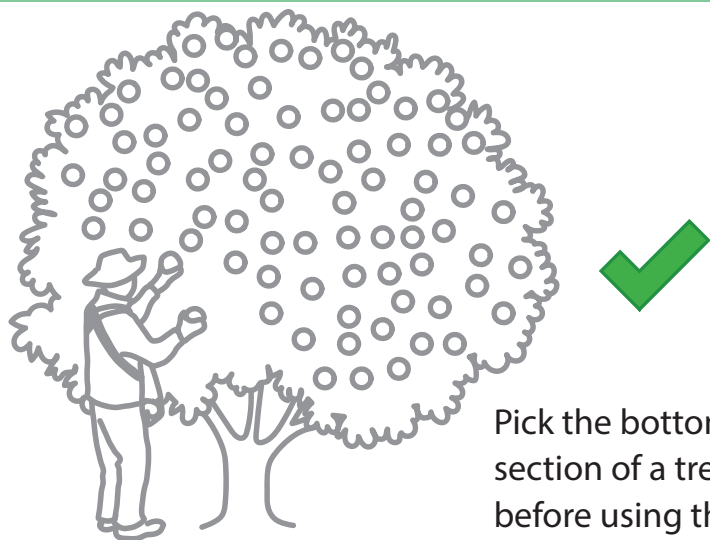


Do not throw fruit into bins.

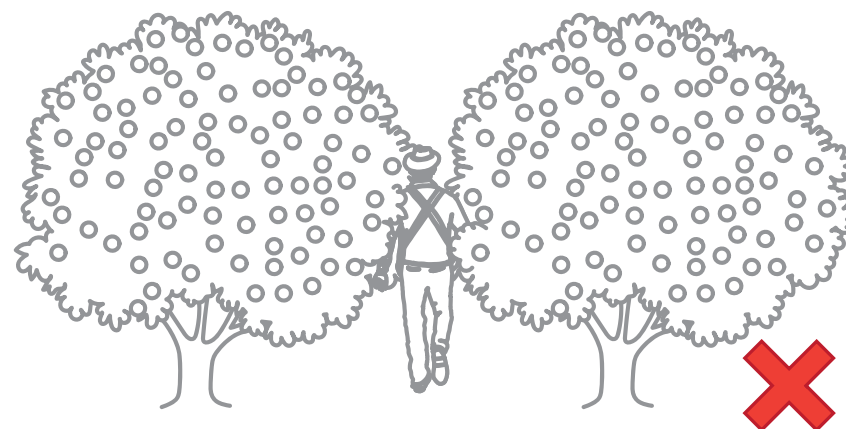
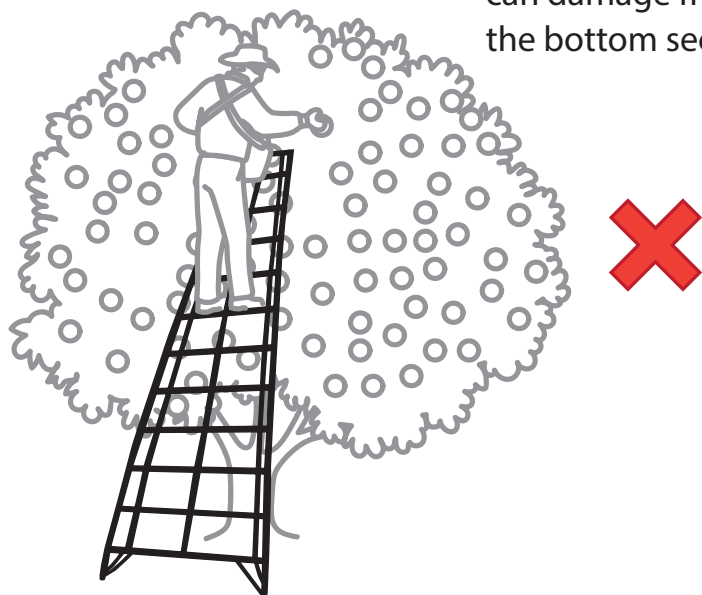


Climb up ladder with an empty bag and down with a filled bag to unload fruit.

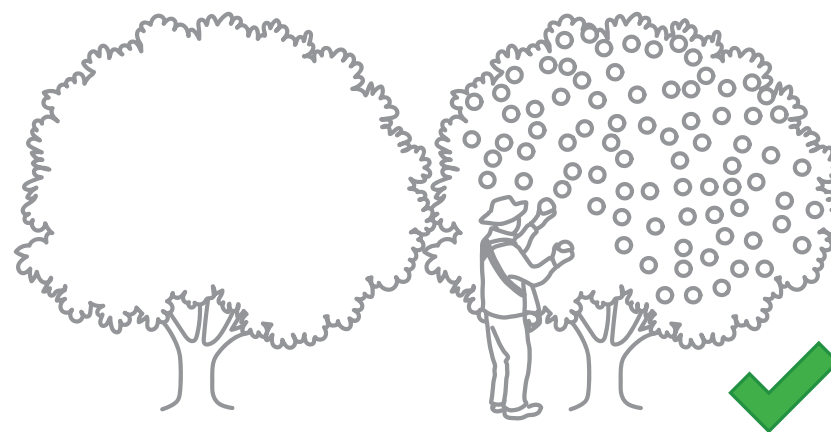




Pick the bottom section of a tree before using the ladder. The ladder can damage fruit on the bottom section.



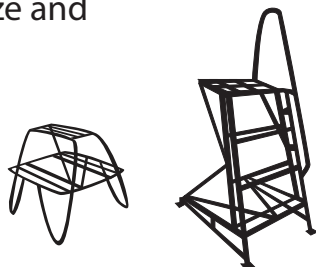
Do not walk in between trees of unharvested fruit. First harvest fruit to make a clear path. Pick and complete one tree at a time.



Ladders

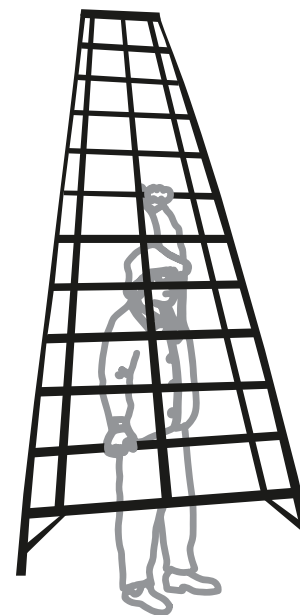
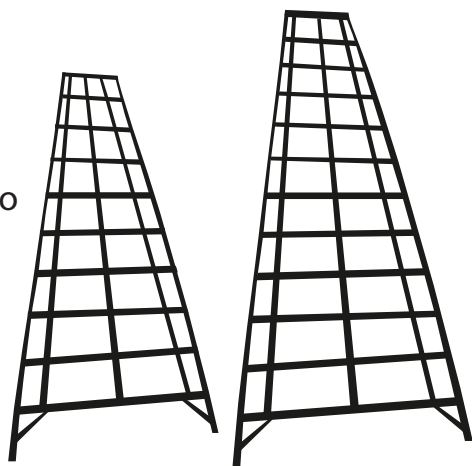
Use a ladder suitable for the size and strength of the trees.

Stool (one or two step) and platform ladders are commonly used on medium sized mandarin trees.



Tripod ladders are used for trees with weak or sparse branches that cannot support a bow ladder. They are commonly used on mounded and mandarin trees.

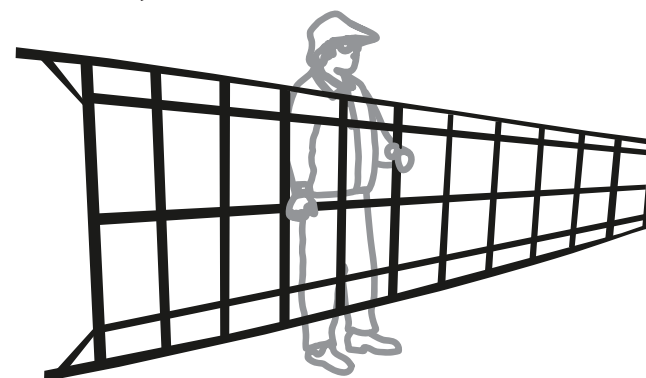
Bow ladders are commonly used on mature orange trees. There are two common sizes, 3 m (10 rung) and 3.6 m (12 rung).



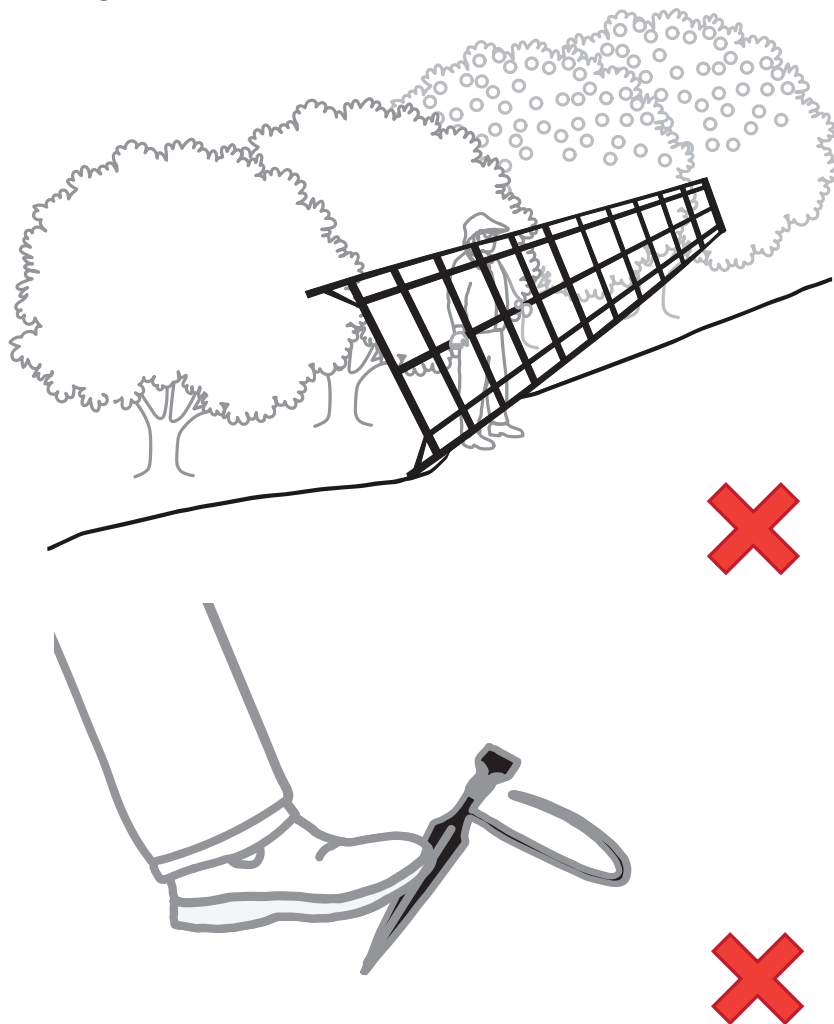
It is best to carry ladders in an upright position with one arm holding the lower rung and the other holding an upper rung.



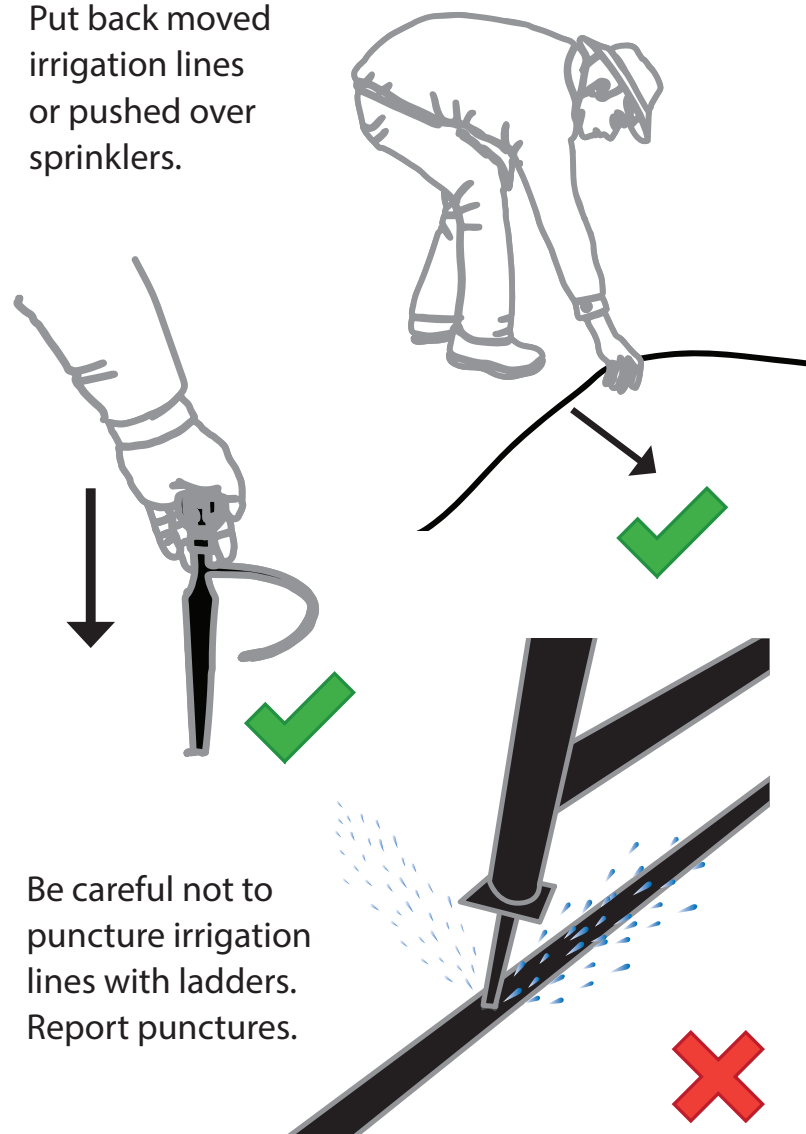
Ladders can be carried horizontally, however, they can easily bump into other people or machinery.



Be careful not to push over sprinklers or drag irrigation lines with ladders.

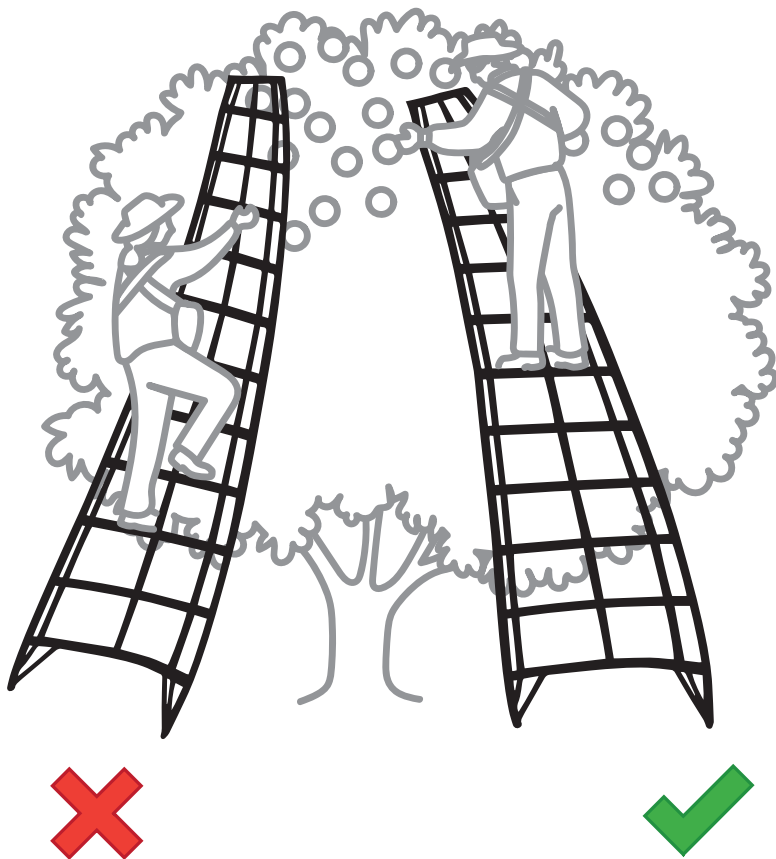


Put back moved irrigation lines or pushed over sprinklers.



Be careful not to puncture irrigation lines with ladders. Report punctures.

Place bow ladders with the arch facing outwards and point the ladder towards the centre of the tree.



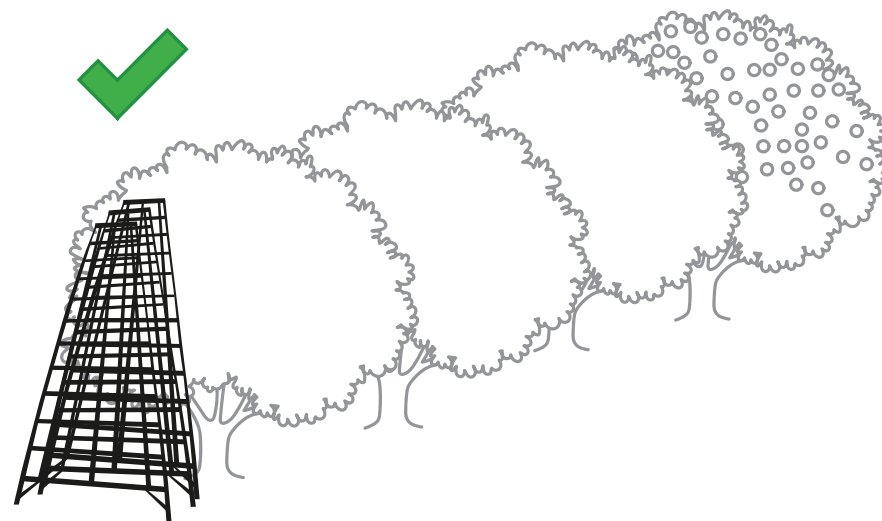
Finishing the day

Report any broken equipment to your supervisor.

Place ladders out of the way of tractors that need to pick up fruit in rows or move bins.

Ask your supervisor where to put ladders:

- in between trees, or
- end of rows, or
- on a ladder trailer or truck.



Machinery

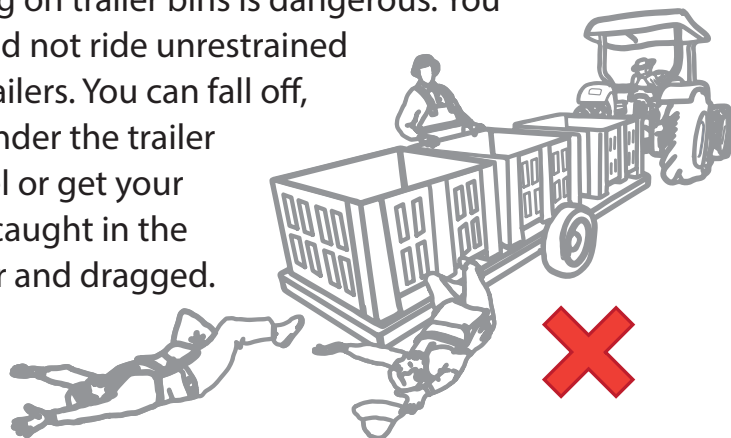
Tractors

Only operate a tractor after being authorised and trained by the supervisor.

- Follow safe tractor use procedures as indicated by the supervisor.
- Only one person is to travel in a tractor at a time.
- Watch out for people and drive slowly and carefully along rows.

Do not place personal items (e.g. lunch, drinks, hand bags) next to bins or a tractor as forklift drivers may not see them.

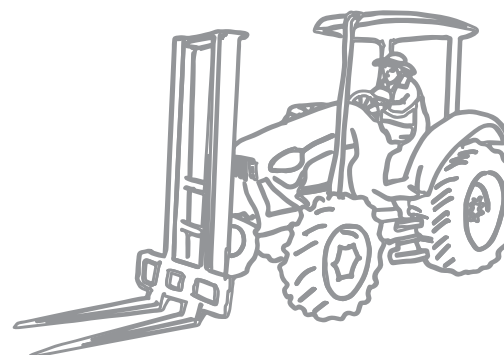
Riding on trailer bins is dangerous. You should not ride unrestrained on trailers. You can fall off, fall under the trailer wheel or get your foot caught in the trailer and dragged.



25

Forklifts

Some states require a forklift licence to operate a tractor with a forklift mast implement. For other states, only operate a forklift if authorised and trained by the supervisor.



If you leave a machine such as forklift or tractor with the engine running, make sure the machine is in **PARK** and the handbrake set.

- Follow all tractor and/or forklift safety requirements.
- All bins of fruit must be collected by the end of the day.
- If a bin is left overnight, put it aside and tell your supervisor.

Do not ride unrestrained in vehicles, forklifts, tractors or on the back of work utes or on trailers.

Safety

Ladder and picking safety

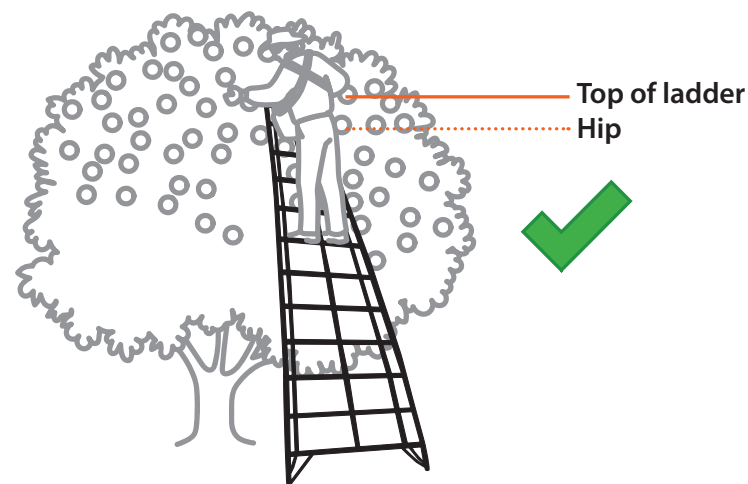
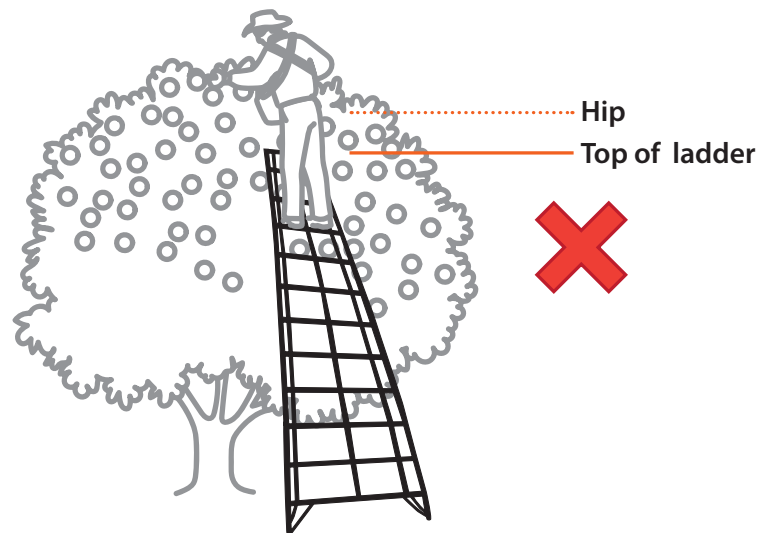
Position your ladder carefully

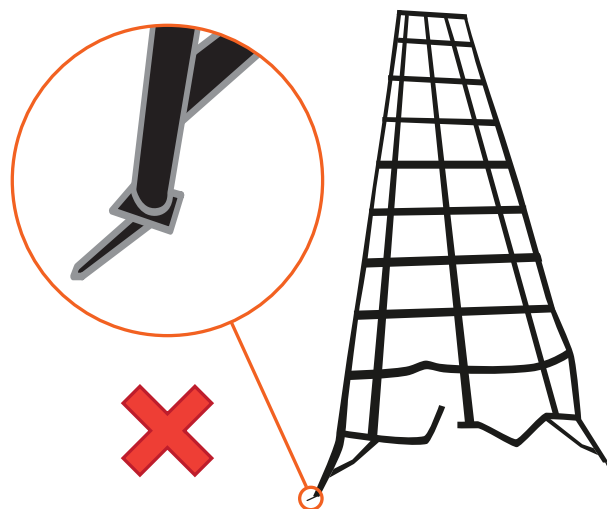
Use a ladder and make sure it is stable. Push the leg stakes into the ground and ensure the ladder is braced against strong branches and will not fall through the tree. Give the ladder a push and shake before climbing to ensure it is well braced.

Do not bend over too far from the ladder.



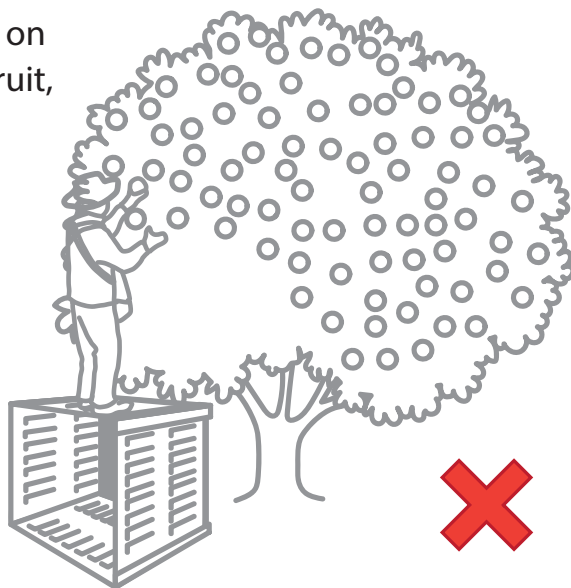
Do not stand on the top rungs of the ladder. The top of ladder must not be below your hip.





Do not use a faulty or broken ladder.

Do not stand on bins to pick fruit, use a ladder.



Do not place the ladder feet on mounds. The ladder feet must be placed at even heights on the ground. Preferably use a tripod ladder (p. 36) with a customised leg height.



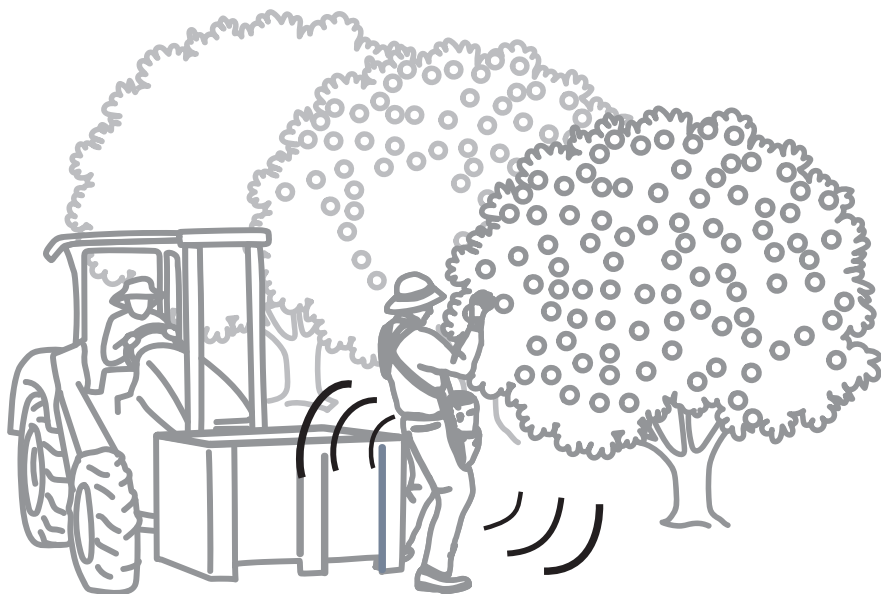
Do not climb trees to reach the fruit. Do not harvest fruit out of ladder reach. Move your ladder to make sure you can safely pick all fruit.



Machinery

Watch out and listen for tractors and machinery

- Stay clear of tractors; assume the driver cannot see you.
- Be especially careful when tractors are moving down rows where you are picking.



Personal health



Do not work if injured, sick or unable to do manual work.



Do not work under the influence of drugs or alcohol.



Bring adequate food. The right type and quantity of food can help you pick faster and longer throughout the day (body fuel), see *Citrus harvesting exercise and nutrition guide* Primefact. Take regular breaks and keep hydrated.



Take plenty of water. An adult needs to drink 2-3 L per day and more if active or in hotter climates.
<https://www.nrv.gov.au/nutrients/water>

Accidents

In case of accident or injury:

1. Before starting work, check with your supervisor who is responsible for first aid, how to contact them quickly and any other accident policy procedures.
2. For a major injury, immediately phone 000 and report it to the supervisor; for other injuries report to your supervisor and seek first aid.
3. Do not put yourself in danger to help an injured person; wait until the danger has been removed or stopped.
4. Do not move a person if they have a possible neck or spine injury—wait for help.



Do not use headphones in orchards, you can not hear others or machinery.

Practice good hygiene

Clean and cover all cuts and wounds.



Wash hands with soap after using the toilet.



Manual lifting

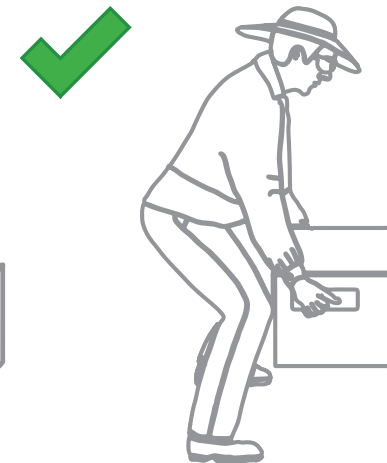
Core concepts

- Picking involves bending over with a load, which increases the risk of back injury.
You must use safe manual lifting practices.
- Strengthening your body before the season will make work easier and less painful. Warm up your muscles before starting and regularly stretch your back during work. See *Citrus harvesting exercise and nutrition guide* Primefact.
- Lift by **bending your knees** and keeping your **back straight**, do not lift by bending over and curving your back. The lower back should be slightly arched inwards whilst lifting.
- Having a slight bend in your knees whilst standing helps to improve posture.
- Keep the load close to your body.
- Do not twist your back whilst carrying the load, reposition legs to move around.



Do not curve your back.

Ask for
help when
necessary

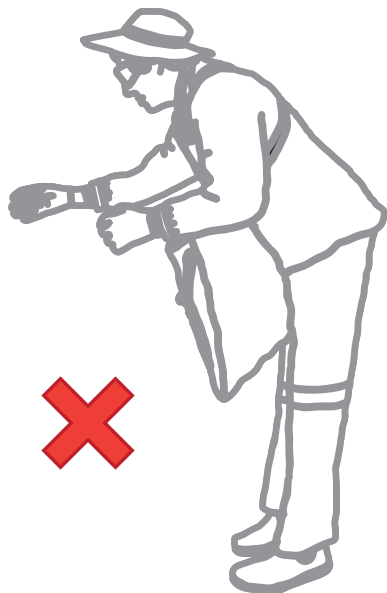


Back is straight or slightly inward curved, arms and legs lift the load (bend the knees).

Picking bag manual lifting

Keep your back straight. Avoiding bending can reduce back strain and pain.

Avoid leaning over and bending to pick fruit. Step closer to the fruit to keep your back straight.



Kneel down to pick any low fruit. Bag can rest on the ground.



Avoid bending over when kneeling down. Move closer to the fruit. Keep your back straight.



Avoid twisting your back to reach the fruit; reposition your legs instead.



Harvest Tips

First time picking

- Picking is physical work and doing it for the first time will cause muscle aches. Improving your fitness before the picking season will help, see *Citrus harvest exercise and nutrition guide* Primefact.
- Slowly build up your pace in the first few days and then target typical picking rates (generally mandarins 2–3 bins/day and oranges 5–6 bins/day).
- Half fill picking bags in the first few days until you strengthen.

Back and muscle care

- To avoid back and muscle injury, safe manual lifting practices must be adopted (p. 52).
- Warm up before starting and continue to stretch during picking (*Citrus harvest exercise and nutrition guide* Primefact).
- Try the suggested fruit unloading arm bracing method when unloading fruit from bags to reduce the load on your back muscles (p. 28).

Picking speed

- Increase your picking speed by spending less time walking around the tree and more time picking fruit. There are various strategies that include:
 - Select a ladder-width (i.e. 1/4 tree) space at the bottom of the tree. Place the ladder in the space and pick the top. Move the ladder sideways and start the procedure again, eventually working around the trees in a clockwise or anti-clockwise direction.
 - Climb up the ladder with an empty bag, if the bag is not full after picking the top then pick more fruit on the way down or from the bottom of the tree.
 - In some orchards pickers work in pairs, one person harvests the base of the tree and another the top. By work agreement, bin tallies are pooled together because picking tops is slower. Using a small, light stool (p. 36) to harvest the base of the tree can help reduce the load for the top person.
- Snap picking: After practicing the standard “Tilt, twist and snap” picking method (p. 16) try the slightly faster cradle picking method (p. 17).

- Watch and learn from fast pickers.
- Eat well and drink adequate water to help give your body energy throughout the day, see *Citrus harvest exercise and nutrition guide* Primefact.

Employment

- Work availability: The Australian Government [Harvest trail website](http://www.harvesttrail.org.au) (www.harvesttrail.org.au) has information, and there are other private harvest websites. It provides information on work, pay regulations and other matters.
- Harvest contractors are a popular source of employment. A harvest contractor arranges work for pickers. They charge a fee and some provide accommodation and transport.
- Check if the employer is a registered Australian business at the [ASIC web site](https://connectonline.asic.gov.au) https://connectonline.asic.gov.au
- Talk to others about employer reliability (i.e. pay and regularity of work).

- Clearly understand all employer charges (accommodation, transport, management fee etc.) and pay rates.
- Record bins picked or hours each day.
- For unresolved pay disputes contact the [Fair Work Ombudsman](http://www.fairwork.gov.au) www.fairwork.gov.au Ph 13 13 94 .

Appendix: Fruit bruising—oleocellosis

- Oleocellosis is a rind injury that can occur when harvesting too roughly (i.e. fruit squeezed or bumped) or during unsuitable weather conditions.
- It is caused when rind oil cells break and the oil burns the rind. A dark blemish on the rind with a slightly sunken surface appears within two to four days. Raised intact oil cells might be visible in the damaged area.
- Damage can lead to fruit decay.
- Fruit are most susceptible when the rind is turgid (swollen with water) from:
 - Cold weather.
 - Water on fruit (rain or morning dew).
 - Recent irrigation or rain (tree is charged with water).

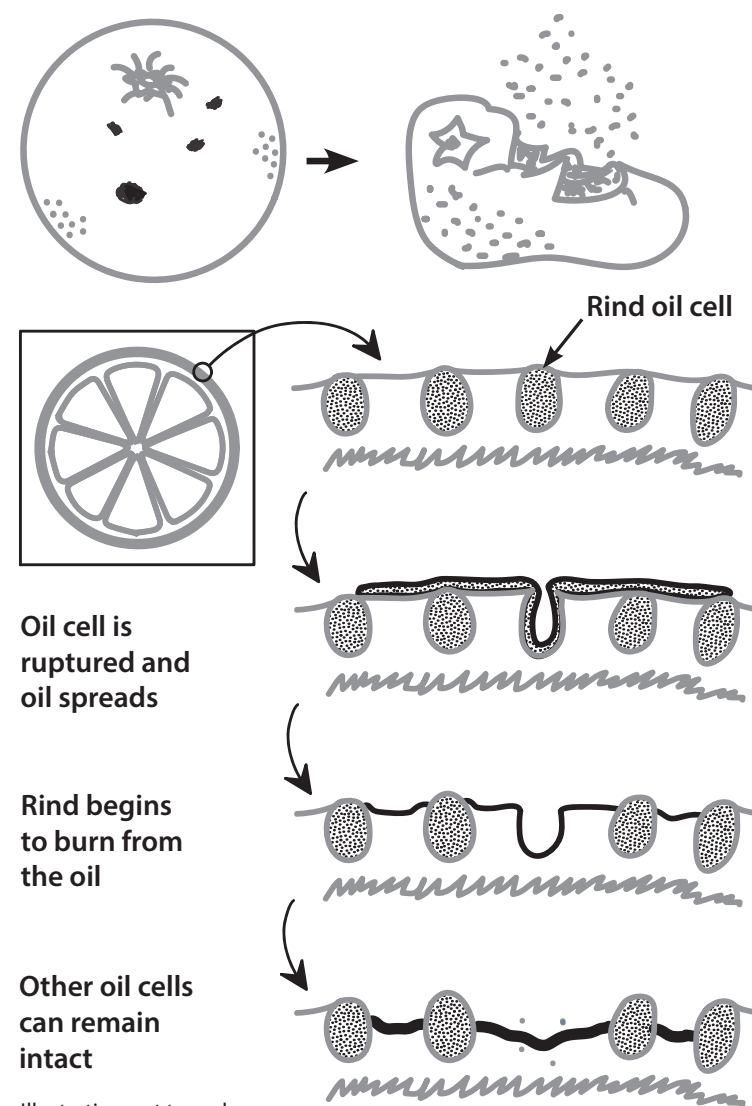


Illustration not to scale

