



**Beekeeping - Certificate III
Participants Learning Guide**

RTE3131A Transport livestock (bees)



Australian Government
**Department of Agriculture,
Fisheries and Forestry**



**Australian Honey Bee
Industry Council**

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What this learning guide covers

This learning guide will help you meet the requirements of the unit of competency:

- *RTE3131A Transport livestock (bees)*

Resources you will need for this unit

- Participants Learning Guide (this booklet)
- Participants Assessment Worksheets for this unit
- Bee Agskills: A Practical Guide to Farm Skills, NSW Department of Primary Industries 2007 available from <http://www.tocal.nsw.edu.au/reader/tocal-publications/bee-agskills>
 - a beehive with active bees
- tools and equipment:
 - thermometer to check temperatures inside beehives
 - frames or ventilated bee-proof box
 - ladder
 - saw
 - bucket
 - clippers
 - rope
 - bee brush
 - bee smoker and fuel
- protective clothing and equipment:
 - bee veil
 - bee-proof overalls and gloves
 - steel capped boots/shoes/gaiters
 - sunhat and unperfumed sunscreen lotion.

Introduction to this unit

In this unit, you will learn about:

- preparing to transport bees
- loading beehives
- transporting and unloading beehives
- completing transport operations.

Before you start this training you should be confident about your skills to:

- steer, manoeuvre and position vehicle in a smooth and controlled manner in on and off-road conditions
- demonstrate safe handling of bee hives
- safely operate loading and unloading equipment
- apply hand-eye co-ordination
- demonstrate safe and environmentally responsible workplace practices
- obtain relevant licenses and permits
- recognise vehicle operational faults
- demonstrate emergency procedures and defensive driving techniques
- read and comprehend manufacturers specifications, work and maintenance plans, and Material Safety Data Sheets (MSDS)
- interpret transport plan requirements
- communicate verbally to advise and anticipate conditions
- maintain records, reports, and log books.

You should know about:

- industry and legislative requirements for the transport of livestock, in particular, bees
- animal welfare and OHS legislative requirements

- environmental codes of practice with regard to vehicle operation and beekeeping
- sourcing and costing transport alternatives
- enterprise policies with regard to the use of vehicles and equipment
- equipment functions, technical capability and limitations
- hauling and towing procedures
- defensive driving techniques
- relevant documentation requirements and procedures.

1. Developing a plan for transporting bees

When to move beehives

If you intend to move hives, it is done at night and often into the following day so it is important to be fresh by having a good night sleep the night before.

Do a scouting trip

As beekeepers often transport bees to remote areas on private property or crown land, it is important to check out the intended site prior to migrating hives about a week before the planned move.

This gives you the opportunity to check the conditions of the roads, clean the intended site, check the gates and if locked, make arrangements to obtain keys, tell the land owners to expect the colonies to arrive on a certain date at night, and most important, check the conditions of the flora to see if it is suitable for the colonies to be migrated onto.

By doing this scouting trip you can estimate your travel times and pick out likely stopping places to check the load and take a break.

Vehicles equipment and resources

Beekeepers' trucks are specially equipped for moving beehives.



This truck is fitted with a purpose-built loader.

Source: Bruce White

Hives are generally loaded with especially built truck mounted beehive loaders or adapted forklifts loaders or using a ramp and barrow.

In all states, licenses are required to operate the larger type of loaders. Check with your state to find out the requirements.

Some beekeepers load hives by hand – this is called the 'strong arm method'.



A forklift is another practical way to load beehives.

Source: Bruce White

The vehicle transporting the hives must have sufficient:

- ropes or straps to tie down the load correctly and spare hive straps
- a water tank for washing hands and filling your knapsack sprayer
- fire extinguisher.
- two jacks in case you get bogged or to change a tyre - a high lift jack is very handy
- rake and spade to clear rubbish or dig holes to get out of a bog or extinguish smoker safely
- two smokers (a spare is a safety measure) and smoker fuel
- two hive tools
- winch or a snap strap can be very handy to assist in moving a vehicle

- matches to light the smoker
- esky to carry food and drink
- truck hazard triangles and high visibility vests in case of a breakdown
- spare tyre
- torch
- bee net if used for transporting
- first aid kit
- mobile phone
- log book if required
- writing material
- ramps if a forklift, loader or barrow is used
- keys for any locked gates
- newspaper.

Routine pre-operation checks

Check the vehicle has the equipment you need to load and unload the hives.

Carry out pre-operation checks on the vehicle including:

- fuel - often additional fuel tanks are added to bee trucks
- lubrication levels
- tyres and wheels
- control cables.
- warning lights
- electrical equipment.
- braking hydraulic systems.
- loader.

You must also calculate the load. Ensure you have sufficient space on the tray of the vehicle so you meet the vehicle and state legislation requirements for height, weight, width and safety for the load of bee hives you are carrying.

Road transport insurance and claims

It is possible to include moving beehives in your road transport insurance policy.

Policies vary from company to company but generally cover 'destruction, loss or damage while hives are being loaded, transferred by road or unloaded at the destination from the conveying vehicle when the vehicle is in your care, custody or control due to fire, flood, collision or contact of the conveying vehicle with another vehicle or object or overturning of the vehicle, and theft following violent and forcible entry to the vehicle.'

Cost of hiring a replacement vehicle is also sometimes covered as is the removal of debris, for example if a truck turns over with a load of bees.

Insurance companies often use the services of the state apiary section when valuing such claims.

Beekeepers have made insurance claims following accidents when transporting loads of bees. In the case of a roll over, the whole load is sprayed with foam and a hole dug and the lot buried at night to reduce the risk of bees becoming a road hazard during daylight. If this occurs, you should try and save some hives so they can be assessed.

Biosecurity

You must make sure that there are not any movement restrictions in force. If there are, then you may not be able to transport anything through certain areas.

You must also check that your vehicle is clean, especially that it is free from plant material and soil as this could accidentally spread weeds.

2. Load beehives

Before loading beehives, you need to check that you have the necessary personal protective equipment (PPE) and that you have considered any possible OHS hazards.

Personal protective equipment

As well as the usual beekeeping PPE, you should have:

- Safety (hard) hat if using a truck mounted loader or hand loading
- high visibility safety vest.

OHS hazards

In addition to the usual OHS hazards associated with beekeeping, you should consider the likelihood of the following:

- injury caused by incorrect manual lifting of beehives
- mechanical hazards, including hydraulics
- excess noise
- spiders in hive hand holes and bottom boards

Snakes can be a major hazard they are likely to hide under bottom boards of hives. One beekeeper encountered 16 snakes under bottom boards when loading one load of bees on the North Coast of NSW.

- health and safety of personnel and public

If bees are loaded open entrance and if the vehicle needs refuelling or is parked under a street light at night, bees are attracted to lights and can become a serious OHS hazard by stinging the public.

In NSW the *Apiaries Act 1985* states:

“During night hours vehicles with open entrance hives must not park in 200 meters of a street light or within a residential or public area or place.”

Open entrance or closed entrance?

Beekeepers use two different methods of moving bees:

- 'open entrance' which means the hive entrance is left open when the hives are being loaded
- 'closed entrance' where the entrances are closed when loading.

Open entrance moving

Beehives have been designed using migrating lids and bottoms so they pack together for transport with the minimal loss of space but still allowing good air flow for cooling when moved open entrance.

All hives are loaded in daylight with the aim to have them all loaded and tied down in daylight and if a mechanical loader is used it is also secured before dark.

This is the preferred method used by most experienced beekeepers as it is less stressful on the bees in all conditions and the best method to use in hot weather. However, you are more likely to be stung if using this method.

Disease-free bees should be the only ones moved open entrance. Never move hives with American foulbrood open entrance as bees drift into other hives.

Hives should be strapped but some beekeepers prefer not to strap hives when using this method when the boxes are held together well with burr comb and propolis.

If for some reason you have to shut the entrance you must provide adequate ventilation or the bees may smother.



These hives are being loaded 'open entrance'. Source: Bruce White

Closed entrance moving

This should only be used in the cooler months of the year. In hot weather, if colonies are strong and bringing in nectar, it takes less than 15 minutes for a colony to smother once the entrance is closed.

After dark, gently smoke the hive entrance to close the entrance and check the rest of the hive is bee proof if not block up all escape holes with paper. Check that each beehive's strapping or fastener is tight.

When a hive is closed with all exits blocked, the bees will panic, run around consuming nectar and can quickly over-heat the whole hive with temperatures exceeding 62°C causing the wax combs to melt.

To prevent this happening you must provide extra ventilation. Some methods you could try are:

- use a migratory lid with vents
- place matches between the supers so the bees can't escape but allowing an air flow.
- if adding extra supers, you can remove the lid and replace it for the move with a full gauze screen.

Placing gauze at the entrance will not stop the bees smothering as they will go to the light and block the air flow with their heads. Bees don't breath through their heads.

Activity

Place a thermometer inside a bee hive with an open entrance and record the temperature:

Now close the entrance as if you were about to load the beehive for transport and after three minutes take and record the temperature:

Don't forget to open the entrance after doing this!

Prepare beehives for loading

Check the current site where your bee hives are located and remove any OHS hazards, especially fallen branches and large rocks.

Strap the hives individually or onto a pallet. You may need to even up the hives on the pallets you place on the tray of the vehicle by removing some supers so they are level so another pallet can be placed on top.



Hives on a pallet being strapped before loading.

Source: Bruce White

Check the frames are not likely to move and kill bees in transit by chocking them. If you have not manipulated the beehives for about a week before transporting them, you will find that the wax routinely placed by the bees between the top bars will be sufficient to stop the frames moving during transport.

Loading

Put on protective clothing and make sure your smoker is well alight.

Hives can also be placed on pallets of 2, 4, or 6 hives using special fork lift loaders.

Load the palletised or individual hives onto the vehicle as smoothly as possible.

Go to each hive to be loaded and smoke with 4-5 good puffs of smoke.

Pick up the hive or pallet and immediately load it onto the vehicle, smoking the entrance again when they are in place on the vehicle.

Hives are loaded lengthwise with the entrances facing forwards to the way to vehicle will be moving.

There is an advantage in leaving the vehicle motor running when loading as the vibration of the vehicle tray seems to settle the bees down quicker.

When all the bees are loaded and tightly roped or strapped and loader secured, park the vehicle in the centre of where the load had been and turn off the motor.

Make sure the vehicle windows are shut so any remaining returning field bees can land on the load. They will be welcomed in any hive.

The vehicle should not be moved until all the field bees stop flying; this is usually on dusk.

When open entrance moving, it is strongly recommended you cover your whole load with a bee net. A bee net is a piece of large shade cloth cut and sewn to cover the largest load of bees you are likely to move. It is designed with its own ropes and when fitted correctly prevents bees escaping from the load. Beekeepers get these special nets made by a local tent or tarpaulin manufacturer . Bee nets stop bees getting lost from the load in transit if you break down near houses or public places the contained bees will not cause a public nuisance.

The net is put over the load after the bees stop flying and have settled and is tied down tightly with its own set of ropes or ties.

When all the hives are loaded, tie down the load.



The truck is loaded and ready to go. Source: Bruce White

Pre-departure checks

Before setting off:

- Estimate the loaded weight. Its difficult to judge the weight of the hives but you will get some idea when loading. Don't over load the vehicle. If you are stopped at a weighbridge, it is untrue that if you tap the boxes to make the bees fly, the load will weigh less!
- Complete the log book.
- Check that the tyres are correctly inflated for the weight of the load.
- Check that the load is secure.
- If the site is on private property, phone the property owner to let them know that you will be moving the bees onto the property that night.
- If the site is on Crown Land, you should notify the land manager in writing that you have bees on the site and again when you move them out.

3. Transporting and unloading bee hives

Transporting the bee hives

Once you have checked that all is ready, then you should drive immediately to the new apiary site.

It is wise to check the load now and then during the trip, about every 150kms. If you travel over paddocks or uneven ground to reach a public road, make sure the load didn't move before going any further.

You can also check the condition of the bees by walking around the vehicle and listen to the noise the bees are making. If they are making a roaring noise, that indicates they are becoming overheated and should be unloaded quickly.

If you are transporting your hives open entrance, do not stop under lights.

Unloading the bee hives

Hives are best unloaded in daylight. Light your smoker put on your protective clothing and smoke around the entire load aim the smoke at the outside entrances and between the rows. Then untie the ropes or straps, untie the bee net if used and carefully pull it back off the load and spread it upside down on the ground to allow any trapped bees to escape and fly.

Then unload the load smoking each hive entrance while on the vehicle and when it is on the ground. Check all hives before leaving the apiary site and extinguishing the smoker correctly.

Stand at the side of the hive, use plenty of smoke aimed at the entrance closer and open it. Move away quickly. This is usually done at night if you arrive in the day light the procedure is the same.

Before leaving the site, check with a torch that the entrances of all the hives have been opened. It is better not to open the hives for a few days after moving to let the bees settle down.

4. After the trip

After each trip, you should clean and wash down the vehicle. This helps prevent the spread of unwanted plant (weed) seeds.

You must also check the vehicle and replenish any fuel or lubricants that have been used and deal with any maintenance and repairs.

Check that you have complied with any requirements to fill in road transport log books.

Final activities and assessment

Now that you have completed all the activities in this Learning Guide, take some time to practice loading, transporting and unloading bee hives under a variety of commonly encountered working conditions.

When you are ready, you can complete the assessment tasks that are listed in the Participants Assessment Workbook for this unit of competency.

Useful references

Bee Agskills: A Practical Guide to Farm Skills, 2007, NSW Department of Primary Industries

The Bee Book: Beekeeping in Australia, 2nd edition, 2005, Peter Warhurst and Roger Goebel, Queensland Department of Primary Industries and Fisheries available from <https://www.publications.qld.gov.au/>, or phone 1800 801 123.