



How to Trap and Release Dung Beetles

1. Trapping Dung Beetles

The process of trapping dung beetles is straightforward requiring only a few resources that can be rapidly assembled. However, it can be time intensive with many outings resulting in few or no beetles in the traps. Knowing where and when to set traps is the key to capturing large populations suitable for establishing new colonies across grazing landscapes.

It is important to know exactly which species you are after and that you are able to recognise it and discard other, potentially pest species.

The following notes will take you through the process of assembling the equipment and sorting dung beetles for relocation.

1.1 Equipment

- Rectangular plastic tubs (L x W x H : 450 x 300 x 100 mm)
Dimensions are not critical but lower profile traps work better than high profile traps!
Dung beetles are not the insect world's most graceful flyers. Tubs with a large surface area will capture more beetles, but this needs to be traded off with ease of handling.
- Wire mesh (500 x 300 mm, 25 mm mesh)
The long ends of the wire mesh should be bent over approximately 45 degrees on the last grid, 25 mm in from each end. This allows the mesh to sit securely on the plastic tub.
- Carboy (20 L)
A source of water is required. Into each trap pour approximately 15 mm of water. This equates to around 2 L of water in each trap of the dimensions specified so one carboy is enough for 10 traps. The water will prevent dung beetles that fall into the trap from escaping. Beetles will float on the water for many hours but cannot take flight from it.
- Sieve/strainer
Different mesh sizes can be used depending on the size of the dung beetles you are trapping. If trapping a large dung beetle use a sieve mesh size that lets smaller beetles escape and retains the larger species.
- Large plastic container with tight fitting lid
Sieved and sorted beetles can be placed into a large plastic container. A tight fitting lid with small holes drilled to allow air transfer will prevent insects escaping. In summer it is important to keep the container cool. A plastic esky, with holes in the lid is a suitable container to temporarily hold beetles. Do not use polystyrene coolers as they will dig through.
- Dung
It is preferable to use dung from the property on which you are trapping. Many producers will require this as part of their biosecurity measures.
- Coir
Coir bricks (coconut coir) are available from most garden centres and should be swelled in

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water. Once swollen the brick is easily broken up. Squeeze excess water out and place a layer (50-100 mm) in the lidded container for storing/transporting beetles.

- Vermiculite

Vermiculite is an alternative to coir for storing/transporting beetles. It is available from most garden centres and should be swelled in water. Squeeze excess water out and place a layer (50-100 mm) in the lidded container for storing beetles. We recommend a fine vermiculite.

1.2 Setting traps

Traps should be set in a line at least 20 metres apart, at right angles to the wind direction (**Figure 1**). Beetles are attracted to the dung bait and will fly into the wind when approaching a trap. Any beetles upwind of the trap will not detect the bait.

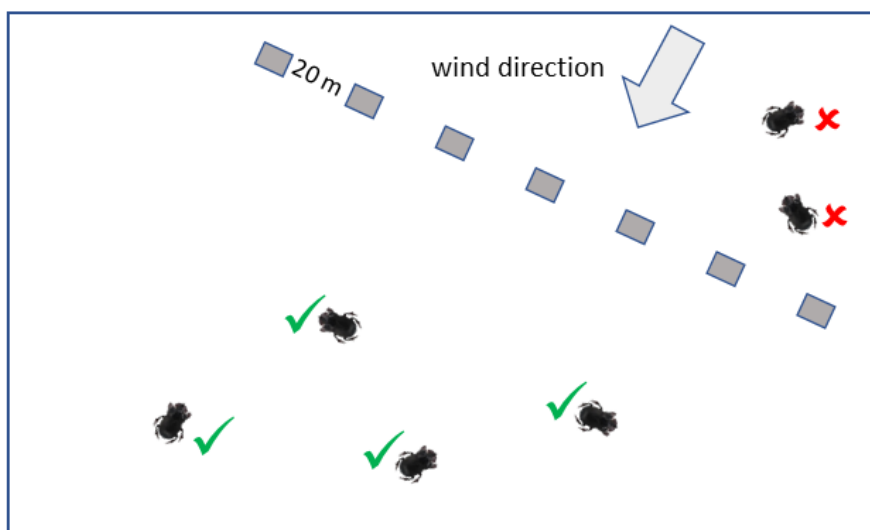


Figure 1: Set traps at right angles to the wind direction. In this diagram seven traps have been set 20 metres apart. Only beetles downwind will detect the bait and potentially move toward the trap.

It is best to set traps away from livestock. Best results will be achieved if the dung on the traps is the best smelling dung in the vicinity. If there are a lot of sheep and/or cattle nearby then beetles will be equally attracted to the dung on the ground and catches per trap will be proportionally lower.

1.2.1 When should you set and collect traps?

What is the target species?

You need to know the seasonal activity (winter, spring, summer, autumn) of the beetle you want to trap and whether your target species is a dusk/dawn, night or predominantly a day active beetle?

For day active species traps can be set around 1-2 hours after sunrise and collected 1-2 hours before sunset. For dusk/dawn and night active species traps can be set an hour before sunset and collected no more than an hour after sunrise.

Following this strategy will mean the trap contents are less mixed and will save time on the sorting table.

1.2.2 How many traps should I set?

This question is open ended. You might get more than 100 beetles in each trap or you might get none. Trapping is like fishing and can be very fickle. It is recommended that relocation of a colony of beetles is at least 1000 to give them a good chance of establishing in their new environment. For the effort required in trapping a minimum of 10 traps is recommended.

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1.2.3 Does the weather matter?

Yes!

Best days/nights to trap are when the weather is seasonally warm and with a light wind. Rainy and/or windy days are not worth the effort of putting out traps.

If trapping in summer, hot days are good but care needs to be taken when trapping throughout the day that the traps are not left out too long. Beetles will die as the water becomes warm. If trapping on days in excess of 30 °C it is best to check traps frequently (every 3-4 hours). If you cannot check the traps regularly on hot days do not set them.

1.2.4 Preparing a trap

Take a plastic tub and pour in approximately 2 L of water. This is about 15 mm depth in the trap dimensions specified. This volume is designed for a 20 L carboy and services 10 traps of the specified dimensions. Place the trap on the ground so it is level and place a wire mesh over the top. The best dung for baiting is the freshest dung you have available. You can experiment, but remember that if you're on someone's property to adhere to their biosecurity measures. Place a piece of newspaper onto the metal mesh and place a handful of dung (≈500 g) on the newspaper. Move on at least 20 metres and repeat making sure the trap line is at a right angle to the wind (see **Figure 1**).

1.3 Collecting traps and sorting

If the dung is from the property, it can be flicked off the mesh and onto the ground. The newspaper decomposes rapidly. If the dung was bought onto the property have a plastic tub that the dung can be tipped into and remove it from the property. At this stage the trap contents can be inspected, and it is often easiest to sort beetles at this stage.

1.3.1 Sorting a trap in-situ

You will need to sort the beetles in the trap. Even if you don't care if you have an assortment of dung beetles you will not want to introduce pest species onto a property. Pick out the beetles you want and put those you don't want, excluding pest species, back into the paddock.

Place the desired species into the lidded plastic container onto a layer of moist coir or vermiculite.

1.3.2 Sorting beetles in bulk

Traps can be collected rapidly by sieving the contents and tipping them into an empty plastic container. The contents can then be taken to another site (shed) and sorted later. You may have thousands of beetles and sorting can take hours, but you need to remove any unwanted/undesired beetles. To sort beetles, take a scoop from the storage container and place them in a container of clean water. Summer active beetles can be very active and take flight rapidly so placing them in water prevents them flying away. Manually sort beetles placing the desired species into a container with a layer of moist coir or vermiculite.

2. Transporting and Releasing Dung Beetles

Beetles should be kept cool during transportation. Shipping in summer can be hazardous to their health and care needs to be taken. Beetles should be released in either the late afternoon/evening or early morning. For a day active species releasing in the early morning is recommended. For a dusk/dawn active species, or a night active species, releasing them in the late afternoon/evening is recommended.

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2.1 Biosecurity concerns.

You can transport dung beetles across state borders, but you need to make sure they are correctly identified (importation of pest species is prohibited and may result in fines or prosecution!), and packed in a substrate such as moist coir or moist vermiculite. If posting, you will also need to state what the species is/are and approximately how many beetles are in the shipment. Biosecurity officers in the destination state may check the shipment and can seize the shipment if it does not comply.

Do not transport beetles in dung or the shipment will be seized.

For individual property biosecurity you need to check with the owner that you are complying with their biosecurity measures. Transporting cleaned beetles packed in moist coir or moist vermiculite is the preferred method.

2.2 Where do I release beetles?

Different types of beetles prefer different soil types. You should release beetles onto a preferred soil to keep them in your paddocks and to encourage them to breed. Once soil types are considered and a suitable paddock selected you should release the beetles from the centre to the downwind perimeter of the paddock you would like them to establish in. Beetles generally fly into the wind as this is distributing the smell of both dung and animals to them. They can only find animals and dung upwind of where they are released (see **Figure 2**).

To release the beetles, find fresh dung from animals that have not been drenched recently (at least 5 weeks) and place some beetles on the dung. Around 30-50 beetles / dung pat for cattle is a good number, proportionally fewer for sheep dung.

After releasing your job is done, the beetles will continue to find dung and follow the animals.

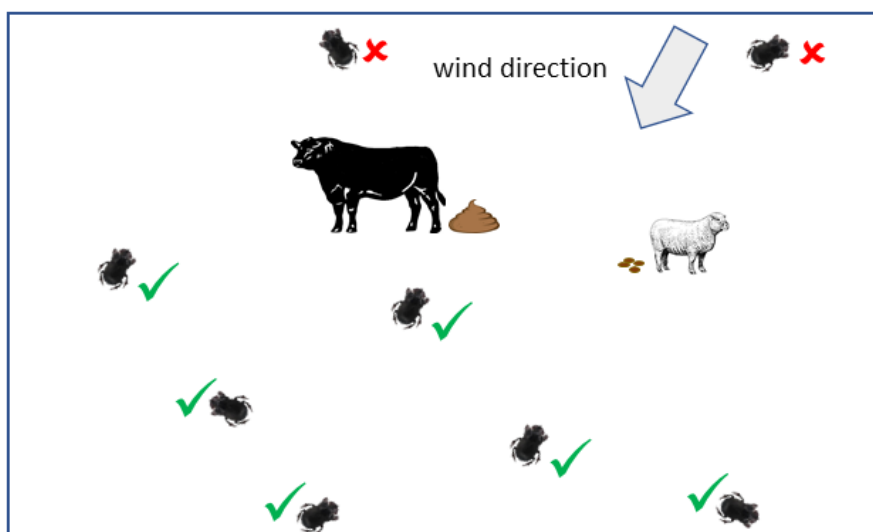


Figure 2: Release dung beetles from the centre toward the downwind edge of the paddock.

2.3 What are the dangers to beetles?

In the southern states the primary predators to dung beetles are birds and foxes. Be especially aware of birds in the vicinity and if there are a lot of birds around wait until the beetles have disappeared into the dung. This will take a lot longer, but the birds will eat fewer beetles.

Apart from predators the main danger is the use of agricultural chemicals, especially the macrocyclic lactones that are excreted in the dung of drenched animals. Limiting the use of these chemicals and managing the livestock that have been drenched will give the beetles on your property the best chances of establishing viable populations.