



Getting started with dung beetle releases on your farm

There are some simple pre-requisites needed before you seed your farm with a starter colony of dung beetles. These are listed below and should be put into practice 24-48 hours prior to receiving dung beetles.

Please note dung beetles are for all livestock farms types (i.e., beef, dairy, sheep, deer, alpaca, goat, horse), and all farming practices (i.e., conventional farms that use drenches, organic farms, biodynamic farms).

Most information regarding dung beetles, what they do with the dung, their long term benefits and management are provided on the following website: <http://dungbeetle.org.nz/>.

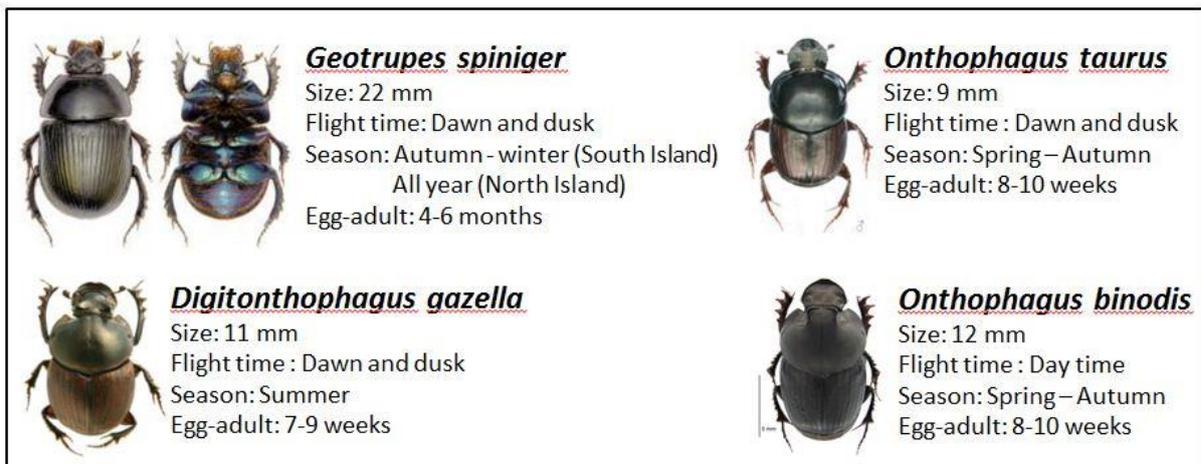
The aim is to maximise establishment success with the following:

1. **Where to seed beetles on your farm (try to adhere to as many of the following as possible).**
 - a. **Sun.** Choose a sunny paddock. On hilly farms or farms with sloping paddocks, aim for a north facing slope that gets maximum sunshine.
 - b. **Shelter.** Not essential, but if possible choose a sheltered paddock which has natural contour shelter or shelter belt protecting the paddock or the part of the paddock, where the dung beetles will be seeded, from prevailing winds and bad weather. Beetles should be seeded on the leeward side of shelter.
 - c. **Ponding/surface flooding.** Avoid paddocks prone to ponding or surface flooding as this will inhibit or prevent dung beetle establishment and may adversely affect development of the eggs and grubs developing in dung balls buried beneath the ground by adult beetles.
 - d. **Central location.** Choose if possible the most central paddock on your farm to seed your dung beetles on. Or choose one that is in the middle of your rotational grazing plan. Dung beetles detect the smell of fresh dung carried on wind currents and fly to the nearest fresh new dung supply.

2. **Making the chosen paddock a 'Dung Island'.**
 - a. **A dung island ensures there is ample fresh dung available in the paddock where dung beetles are seeded.** The first beetles to be seeded onto fresh dung (See Section 4. Seeding beetles) will be contained for 1 week under an inverted plastic bin to prevent their immediate escape and encourage them to commence nest building underground. Once the containers are removed the beetles will begin to colonise fresh dung in the immediate area within the 'dung island'. The aim in the first month following seeding is to prevent dispersal of the dung beetles, as dilution makes it harder for them to find one another and multiply. By keeping a good fresh supply of dung in the chosen paddock will mean dung beetles won't need to travel

too far to seek out fresh dung and thereby disperse too soon. Eventually as numbers of beetles increase they will disperse and follow the herds as they are rotated through the paddocks. Initially though with relatively small numbers of beetles being seeded, dispersal should be limited as much as possible.

- b. Maintain the ‘dung island’ when the next generation of new adults emerge from the ground.** Mark on your calendar the day your beetles are seeded in your chosen paddock. Mark also the dung beetle species. Make sure there is fresh dung available with rotating stock or a small number of drench-free set-stock when the next generation of beetles are likely to emerge. Refer to the image below as a guide (time from egg to adult).



- c. Drenched stock should be kept in paddocks as far away as possible from the ‘dung island’ for at least 6 weeks after drenching.** There are many active chemical ingredients in drenches that are passed in the dung shortly after its application to the livestock that are lethal to dung beetles (and earthworms and other dung feeders), see: <http://dungbeetle.org.nz/management-practices/>. There are a number of “dung beetle” friendly drenches available that can be used in conjunction with dung beetles. Alternatively there are a number of management practices that can be employed if drenching is continued in the presence of growing populations of dung beetles (see link above). Studies have shown significant reductions in gut nematode survival and reinfection of livestock in the presence of dung beetles. An integrated approach with dung friendly drenches and dung beetles will lead to better sustainable management of nematodes and nematode resistance.

3. Dung for seeding dung beetles

- a. Use fresh dung that is no more than 1 day old.**
- b. Firm dung is better than sloppy or liquid dung.** Firm dung holds its shape and volume allowing for easier colonisation and formation of brood balls which the adult beetles make underground. Older dung has lost its chemical properties that attract dung beetles and has begun to degrade thus reducing its quality for feeding on by adult beetles and their developing young.

- c. **Avoid dung that has come from cattle that have been drenched within the last 6 weeks.**

4. Seeding beetles

For this process you will need: 2x 10 litre buckets; nylon fencing tape that can be electrified, fence standards, tent pegs or equivalent, 4 x WHITE or TRANSPARENT long rectangular plastic (fish)bins at least 50 litres in volume. Each bin to have a series of approximately 8 mm ventilation holes drilled into the bottom for the bin and two of the sides, and a securing hole drilled into each corner of the lip of the bin through which tent pegs or similar can be pushed. Each bin will be used as an inverted temporary shelter for seeding beetles once added to the dung.



- a. Collect two 10 litre buckets of dung (see Section 3. Dung for seeding dung beetles) from several animals (this minimises differences in dung quality from individual animals that may be unattractive to seeding dung beetles). Mix well.
- b. Drop 2 x 2-3 litre dung pats side by side making sure the area they cover fits within the dimensions of the plastic bin.
- c. Add 50 beetles to both dung pats.
- d. Place inverted plastic bin over the dung + beetles and keep in place for up to 1 week.
- e. Secure bin with tent pegs or equivalent through each hole drilled in the lip corners.
- f. Repeat steps c.to f. with each bin + dung + beetles near by the previous bin until all beetles are seeded.
- g. Erect an electrified temporary fence to exclude livestock from around the bins.
- h. Mark in the calendar the date when the beetles were seeded and work out when you expect the first new generation beetles to start emerging. Add stock into the paddock from this date.
- i. After 2 days, check on beetle progress. You may decide to add more fresh dung if the existing dung is being well utilised.
- j. 24 hours BEFORE removing the bins, set-stock into the paddock and maintain a small number of stock there for at least 2 weeks.
- k. Remove the bins and temporary fence.

If you have any queries or need further elaboration on preparing your farm for releases please do not hesitate to contact: **Dr Shaun Forgie** Tel: +09 574-4224; Cell: 021 040 86 85; e-mail: forgies@landcareresearch.co.nz, or visit the dung beetle website: <http://dungbeetle.org.nz/>.