

DO the right thing by YOUR dung beetle population!

Livestock and pasture management is the key!

If you also have a cattle enterprise, implement management of both classes of livestock to improve your dung beetle population on farm.

Parasite control

Before treating your stock for flies or internal parasites, be sure that these pests are the problem! An egg count can help determine parasite load.

Take care when selecting and using pesticides for fly or internal parasite control:

- Ivermectin injectable used at the recommended dose, reduced survival of the young of two species of dung beetle for up to 2 weeks in the USA, while Ivermectin pour-on reduced survival of the larvae for up to 3 weeks (Fincher, 1996).
- Dung beetles feeding on dung from Australian cattle treated with the recommended dose of injectable avermectin showed mortality of larvae and immature adults, reduced egg production and inhibited development for up to 4 weeks (Ridsdill Smith, 1993).
- Ivermectin controlled release capsules have the potential to cause substantial declines in beetle numbers, particularly if treatment coincides with spring emergence (Wardhaugh et al, 2001).

Grazing management

Cell grazing or planned grazing can increase dung beetle populations and varieties by concentrating the manure in smaller areas, reducing the time beetles must spend in search of food.

Grazing cycles that match the reproductive cycle of the dung beetles are favourable, since the livestock are likely to return to a paddock at the same time that new adults are emerging from the soil.

Dung beetles DO have economic benefits!

The value of dung beetles to parasite control increases as their population density per hectare increases, and results suggest that one dung beetle would destroy all the eggs of the worm species *Haemonchus contortus* in 1 g of sheep faeces.

At a stocking rate of 8 DSE per ha, lambs and their dams would produce 12 kg of faeces per day. Therefore, 12,000 dung beetles per ha in this pasture would almost completely control nematodes and would relegate haemonchosis to a rare phenomenon in these lambs.

Uncontrolled haemonchosis would kill approximately 20% of the lambs and reduce weight gains by 25 - 50% in survivors. The infective larvae would be developing from faeces being deposited on pasture.

If the value of lambs from 1 ha of land is \$250, uncontrolled haemonchosis would conservatively cost \$100. The study concluded that each 1000 dung beetles per ha has a value of \$8 to a sheep producing enterprise.

Acknowledgements

The Northern Tablelands Dung Beetle Express Committee, Granite Borders Landcare Committee Incorporated, Southern New England Landcare Ltd, GWYMAC Inc, GLENRAC Inc, New England Livestock Health & Pest Authority, CSIRO Livestock Industries, Pam Wilson, Troy Kalinowsky, Jane Boyd, Terry Boyd, Maggie & Brian Hutton, Gerald Martin, Meat & Livestock Australia, Jane Growns and Dr Leo Le Jambre. Front cover image by Elizabeth Kerry. Layout by Kären Zirkler. Reprinted November 2011.

References

For more information on references listed throughout the text, please refer to Le Jambre, L.F. "Dung Beetles and Internal Parasites of Sheep" MLA Super PIRD S2005/N03 Final Report.

Contact

Granite Borders Landcare Committee Incorporated
T: 02 6736 3500
Southern New England Landcare Ltd
T: 02 6772 9123
Email dungbeetles@gbhc.org.au

www.dungbeetles.org.au

The Northern Tablelands

dung beetle express



Brochure 3

Dung Beetles Reduce Internal Parasites in Sheep!

Information sourced from Le Jambre, L.F. "Dung Beetles and Internal Parasites of Sheep" MLA Super PIRD S2005/N03 Final Report.

Photographs kindly supplied by CSIRO
and the Dung Beetles for Landcare Farming Committee.



Background

In 2008, the Dung Beetle Express project attracted funding support from Meat and Livestock Australia (MLA) to investigate a potentially important relationship between the burial of sheep dung and the presence of internal parasites in sheep, in particular, Barber's Pole Worm (*Haemonchus contortus*).

Research aims & outcomes

The research project aimed to:

1. Investigate the extent of sheep dung burial by dung beetles.
Finding: dung beetles in the New England region will bury approximately 1 g dung per beetle per day.
2. Investigate which species utilise sheep dung.
Finding: some 12 species of dung beetle utilise sheep dung in the New England. See more information at right.
3. Investigate the effect of dung beetles on parasite larvae developing in sheep dung.
Finding: dung beetles apparently destroy all larvae in the sheep dung they utilise.
4. Investigate the effect of drenching on dung beetle communities.
Finding: A variety of drenches can have a detrimental effect on dung beetle colonies.

'Culture pots' were set up in the laboratory and on farms across the region to investigate burial of sheep dung by dung beetles.



Onthophagus australis



Onthophagus granulatus



Onthophagus gazella



Euoniticellus africanus



Euoniticellus intermedius



Onitis pecuarius



Sisyphus spinipes



Dung beetles DO use sheep dung!

Native species that utilise sheep dung include:

1. *Onthophagus atrox*
2. *O. australis* (pictured)
3. *O. capella*
4. *O. chepara*
5. *O. dandalu*
6. *O. granulatus* (pictured).

Introduced species that utilise sheep dung include:

1. *O. gazella* (pictured)
2. *Euoniticellus africanus* (pictured)
3. *E. intermedius* (pictured)
4. *Onitis pecuarius* (pictured).

The research found that either *Sisyphus rubrus* or *S. spinipes* (perhaps both) also utilised sheep dung but as they are dung ball-rollers, they removed themselves and the dung before proper identification could occur!

Dung beetles DO destroy parasite larvae!

Dung beetle activity results in a reduction of parasitic larvae on pasture - when dung beetles bury faeces, they actually reduce the numbers of larvae by a corresponding amount.

All larvae in sheep faeces that is utilised by dung beetles are destroyed. In fact, the decrease in larvae developing on pasture is directly proportional to the weight of dung utilised by the dung beetles.

For example, if dung beetles remove 50% of the dung being deposited on pasture, there will be a 50% reduction in the numbers of parasite larvae that develop from the dung!