Increasing Productivity – How Dung Beetles Can Help

Why do we need dung beetles?
Every day, the average cow produces 10 to 12 litres of dung per day. That means Australia’s 28.5 million cattle produce over 285 million litres of dung per day (equivalent to 114 Olympic swimming pools). This amount of dung not only causes aesthetic problems, but has the potential to foul waterways and dams leading to toxic algal blooms as well as creating rank pasture and fertile breeding zones for pests and parasites. A single dung pat can produce up to 3000 flies a fortnight.

Fortunately, dung beetles make use of dung as a suitable meal and breeding material. Dung beetles in Australia either tunnel dung under the ground or roll it away in balls for burial into the ground, distributing the dung pats through the soil. This activity has significant benefits for grazing systems.

Dung Beetle Benefits
Dung beetles benefit pasture by returning nutrients back into the soil. Returning nutrient found in dung back into the soil allows for greater pasture production by reducing nutrient run-off and greater dispersal of nutrients through the soil profile.

Improved Pasture Growth Rates
MLA funded work in southern Australia has demonstrated that a single species, Bubas bison, can improve pasture growth rates by up to 30% with responses persistent for greater than 3 years1. Similar work in Western Australia has shown pasture production increases by 26% over a 9 month period2. This pasture growth response should allow an increase in carrying capacity and reduced fertiliser usage.

Reduction in parasite burdens
Dung beetles benefit cattle health by removing the breeding grounds for pests and parasites. As dung beetles tunnel, roll or shred dung, they remove the available habitat for the development of larvae and reduce moisture content of the dung pat. This reduces the suitability of the dung as breeding grounds for pests and parasites.

Flies, including the costly Buffalo Fly, require a dung pat for around 7 days to complete their breeding cycle. An active, healthy colony of dung beetles can remove dung pats within 48 hours. This rapid removal of dung pats can reduce internal parasites of cattle 9-fold3.

Getting Dung Beetles Working
Dung beetles have preferences for specific climates and temperatures, with their activity highly dependent on climatic factors. That means in many areas, several species of dung beetles with complimentary periods of activity are required to achieve optimal dung burial throughout the year. MLA and CSIRO are working at breeding up populations to help southern Australia have species that enable dung beetle activity in early spring.

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Looking after Dung Beetles on Your Farm

Many treatments for the control of cattle parasites and pests have negative effects on dung beetle survival, breeding capacity and activity. A thorough review of the effect of macrocyclic lactone (ML) drenches on dung beetles has shown that the toxicity rankings against non-target species was greatest for doramectin, followed by ivermectin and eprinomectin, with moxidectin (the active in Cydectin®) being significantly less toxic to non-target species.

Measuring dung beetle activity in Australia, this ranking means that dung from cattle treated with Ivomec Eprinex Pour-On for Beef and Dairy Cattle* (eprinomectin) showed 35% less activity over the next generation compared to cattle treated with Cydectin Pour-On for Cattle.

Another common chemicals known to have negative impacts on dung beetles are synthetic pyrethroids. Timing of these treatments that are detrimental to dung beetles should be restricted to when dung beetle populations are low (dry condition, autumn/winter).

Fortunately, not all cattle health treatments have these consequences. To protect against adverse impacts on dung beetles, the drench that has been tested and has no known impacts on dung beetles is the Cydectin range for cattle. Choosing this drench will ensure that management decisions for parasite control will have no effect on dung beetle activity.

Dung Beetle Resources

http://www.dungbeetle.com.au

1 MLA Report B.ERM.0211 (2008). The pasture growth and environmental benefits of dung beetles to the southern Australian cattle industry
2 Doube, B. (2007) Pasture growth benefits of the dung beetle Bubus Bison in the Margaret River region of Western Australia.
7 When applied as directed, the levels of Cydectin Pour-On for Cattle in faeces of treated cattle are not likely to have any significant adverse effect on the following dung beetles: Onthophagus gazelle, O. taurus, Eunoeoecus intermedius, E. fulva. Effects on other dung beetle species have not been tested.

*Ivomec Eprinex Pour-On for Beef and Dairy Cattle is a registered trademark of Merial Australia.