

## 5. Application methods can make a difference

The application method influences the amount of chemical absorbed by treated animals, which may be excreted in their dung. Methods can be ranked according to the dose of chemical absorbed by animals from an application (Fig. 2).

## 6. Use the recommended dose rates

Research into the effects of chemicals on dung beetles is based on their use at the recommended dose rates. If a chemical known to be low-risk to dung beetles is used above recommended dose rates, the treatment may be more toxic not only to cattle and operators, but also to dung beetles. If used below recommended dose rates, the treatment will be less effective and may lead to rapid pest resurgence and accelerated development of resistance to the chemical.



## 7. Other considerations

Making a choice among active constituents, formulations and application methods should involve more than a focus on potential impacts on dung beetles. There are other issues such as occupational health and safety, withholding periods to counter residues in cattle products, drug resistance and animal welfare that need to be considered in making an informed decision.

### Further Information

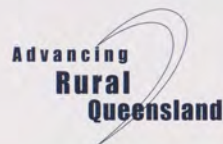


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This publication is intended to provide producers with information to enable them to choose parasiticides and parasite control strategies to minimise the impact on their dung beetles. The information is not intended to reflect upon the efficacy of any product as a parasiticide. The material is based on information contained in CSIRO Contracted Report #56 by K. G. Wardhaugh (2000): *Parasiticides registered for use in cattle in Australia – an annotated bibliography and literature guide prepared for the National Dung Beetle Planning Forum*, in the scientific literature mentioned therein or located independently.

This Note is provided for general information only. For application to specific circumstances, professional advice should be sought. AgForce Queensland and the Queensland Dung Beetle Project Management Committee have taken all reasonable steps to ensure accuracy at the time of publication.

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# Strategic use of Parasiticides can help your Dung Beetles



Most cattle producers need to use chemicals (known as **parasiticides**) at times to control livestock parasites. Residues of some parasiticides are excreted in dung, where they may harm beneficial dung-feeding insects such as dung beetles.

Dung beetles bury and disperse dung and can play an important role in controlling dung-breeding parasites (e.g. buffalo fly, gastrointestinal worms). Therefore producers should be aware of chemicals that may have an adverse effect on the survival and performance of dung beetles on their properties.



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There are seven factors to consider when deciding on the best practice use of parasiticides in developing or modifying your parasite control program.

### 1. Choose lower risk chemicals based on available research information

To select chemicals that are low-risk for dung beetles, see the AgForce Leaflet 'Consider your Dung Beetles when using Parasiticides'. If a higher risk chemical is required, see (2) and (4).

### 2. Timing is critical

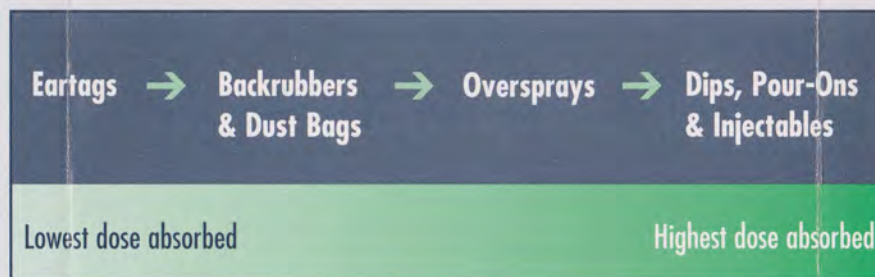
Producers should be aware of the 'danger period' (the beetle activity season – see Fig. 1) when some synthetic pyrethroids (SPs) and most macrocyclic lactones (MLs), can be hazardous to dung beetles. This 'danger period' can extend from October to March. When dung beetle activity is low during the cooler drier months, the effects of high-risk chemicals on beetles are minimised. If you live in southern Queensland and have the autumn-active beetle *Onitis caffer* on your property, the danger period extends to the end of June.

**Figure 1.** Recommended seasonal 'safe' periods (green areas) and 'danger' periods (blue areas) in Queensland for the avermectins (MLs) and those SPs also known to be high-risk for dung beetles. In southeastern Queensland, the danger period extends to the end of June to cater for the future spread of the autumn-active dung beetle *Onitis caffer*, which has not been tested against any of these chemicals.

Type of Chemical	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Macrocyclic Lactones:</b> Avermectins	Safe Period			Danger Period						Safe Period		
<b>Macrocyclic Lactones:</b> Moxidectin*				Safe Period								
<b>Synthetic Pyrethroids:</b> Cypermethrin Deltamethrin	Safe Period			Danger Period						Safe Period		
	Jul	Aug	Sep	Main Summer Rainfall Period						Apr	May	Jun

\* When used at recommended rates for cattle, has no known impact on *Onthophagus gazella*, *O. taurus*, *Evoniticellus intermedius* and *E. fulvus*.

**Figure 2.** Most parasiticides that are high-risk to dung beetles are applied using methods in the right half of the diagram. If possible, choose a product with an application technique from the left half. Note that backliners are a type of pour-on.



### 3. Reduce frequency of treatment

Do your cattle really need the treatment? Is the parasite load high enough to warrant it? Should you test the parasite burden by doing worm egg counts (e.g. Wormbuster)? Is the return likely to be worth the cost of treatment? Can you tolerate higher parasite burdens on your cattle before deciding to treat?

### 4. Selective use of chemicals to target specific groups of animals and specific parasites

This is an important strategy - if you decide to use a chemical that poses a high risk to dung beetles during the danger period, then treat the smallest number of animals possible. If you treat your whole herd with a high-risk chemical, the potential impact on your dung beetles could be devastating. The question to ask yourself is: Does the whole herd need the treatment? Perhaps you need only treat the weaners for worms, for example, or the bulls for flies.

