



Techfile

01/2004

March 18th, 2004

Effect of Coopers Paramax Pour-On on Earthworms and Dung Beetles

Coopers Paramax Pour-On for Beef and Dairy Cattle contains 5g/L ivermectin and is indicated for the treatment and control of internal and external parasites of cattle.

Recently, the Australian Pesticides and Veterinary Medicines Authority (APVMA) approved the following statement be added to the Coopers Paramax label in regards to safety to earthworms and dung beetles.

***“When used according to label directions, Coopers Paramax Pour-On for Beef and Dairy Cattle is not likely to have an unintended effect that is harmful to the environment or have an overall adverse effect on dung beetle or earthworm populations.*”**

Increased mortality and impaired development of dung beetle larvae may be expected, but for a limited period after treatment. There may also be a short-term indirect effect on the rate of earthworm colonisation of dung pats.”

How important are earthworms and dung beetles to Australian cattle farmers?

Australian cattle farmers are becoming far more environmentally aware and more focused on the issues of sustainability. As part of this focus, they give careful consideration to the effect that drenches and other livestock treatments may have on beneficial organisms (e.g. earthworms and dung beetles).

In a recent telephone survey of 125 beef producers and 76 dairy farmers throughout Australia it was established that cattle producers consider earthworms to be somewhat more important than dung beetles. Furthermore, 21% have put some effort into managing their earthworm population around the farm in the past (Figure 1).¹

The survey also established that 18% of producers have considered the impact drenching might have on their earthworm population, while 67% indicated that an earthworm-friendly drench would impact on their choice of drench (Figure 2).¹

Figure 1. Importance of earthworms and dung beetles to Australian cattle farmers¹

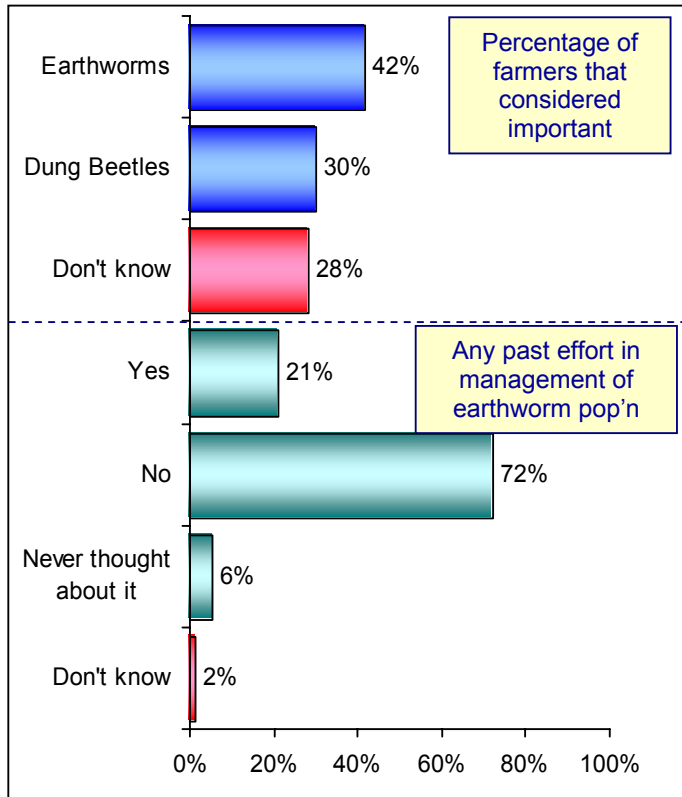
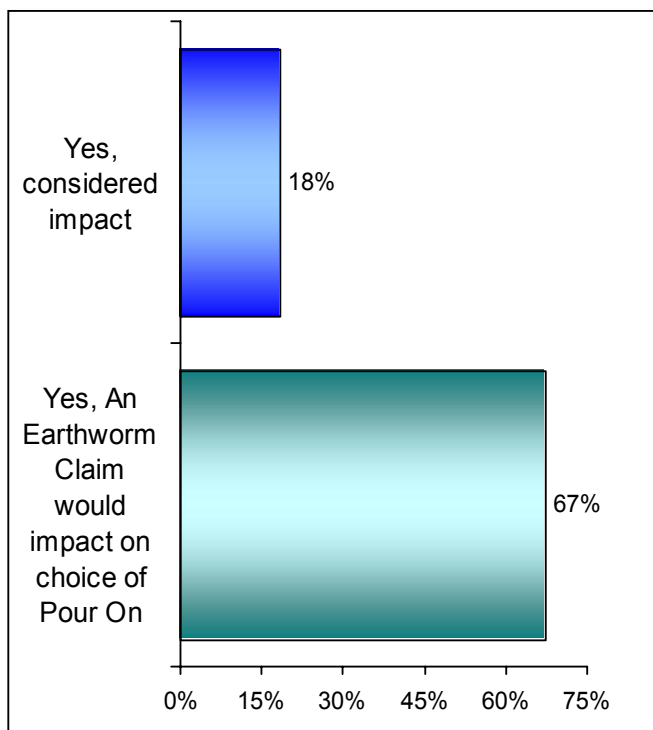


Figure 2. Impact of drenching on earthworms¹



Do Earthworms play a role in dung disappearance?

Yes. Earthworms play the major role in the disappearance of dung pats in temperate pastures in Australia.² The consumption of dung and vegetable matter by earthworms can be enormous. It is estimated that from feeding experiments that a population of 120,000 adult worms/ha is capable of consuming 25-30 tonnes of cow dung annually.³

Earthworms also play a major role in improving soil structure as they ingest soil and mix it with organic matter and also construct burrows or channels that help drain and aerate the soil.⁴

Effect of Ivermectin on Earthworms

Laboratory studies suggest that residues of up to 25ppm ivermectin in dung are unlikely to have any significant detrimental effect on earthworm populations.⁵ The highest level of ivermectin in dung from cattle treated with an ivermectin based pour-on formulation has been reported at 17.5ppm dry matter at two days after treatment.⁶

Field studies similarly have failed to demonstrate any significant long-term effects on earthworm populations either in the dung or in the surrounding soils from animals treated with ivermectin.^{7,8,9,10}

Effect of Ivermectin on Dung Beetles

The National Registration Authority (NRA) Special Review of Macrocyclic Lactones (May 1998) identified that ivermectin present in the faeces of treated cattle had the following effects on dung beetles:¹¹

- No toxicity to mature egg laying adults
- Increased mortality and impaired development of larvae with sub-lethal effects on the morphology of some species. These effects are mostly confined to dung excreted within 2-3 weeks of treatment.
- Increased mortality and delayed reproductive development of newly emerged adults of some species feeding on dung excreted within 1-2 weeks of treatment.

The overall conclusion of the NRA Review was that the use of macrocyclic lactones (including ivermectin, e.g. Coopers Paramax Pour On) is unlikely to have a long term detrimental effect on dung beetle populations or dung disappearance rates in the field under Australian conditions.

Conclusion

Beef and dairy farmers can use Coopers Paramax Pour-On on their cattle to control internal and external parasites with the added comfort of knowing the product has a registered safety statement on its label that states when used as directed it is not likely to have an overall adverse effect on dung beetle or earthworm populations.

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