

Can you preserve your dung beetles yet use beetle-toxic worm treatments?

Toxic and Non-toxic worm treatments*

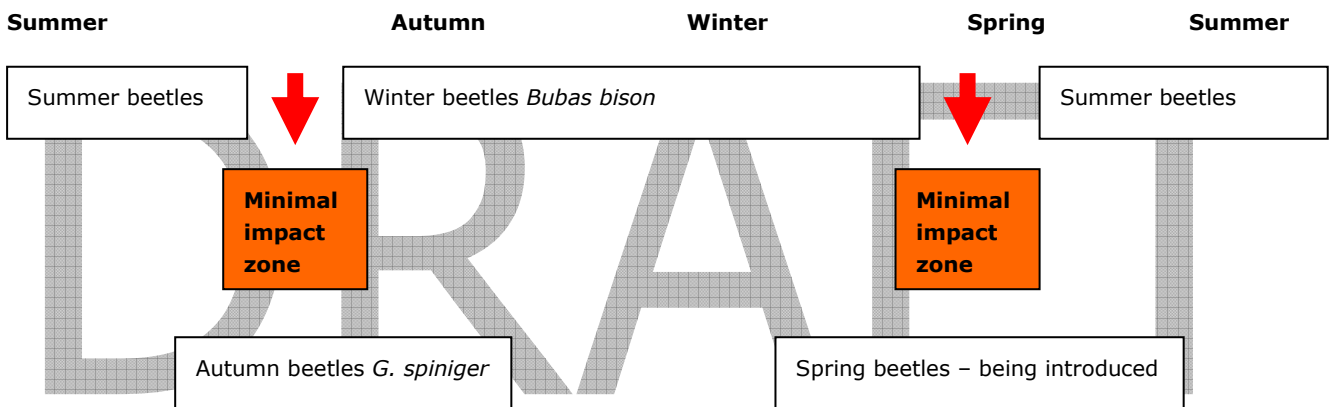
Toxic chemicals	- Avermectins (Abamectin, Doramectin, Eprinomectin, Ivermectin)
Non-toxic chemicals	- Moxidectin (Trade name, Cydectin)

Minimising the impact of worm treatments on dung beetles

Dung beetle life cycles

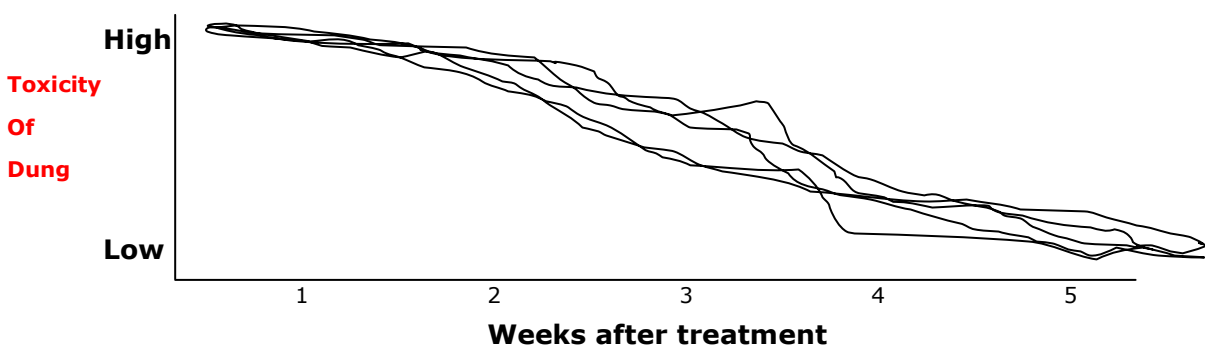
Newly emerged adults	Mature adults	Eggs	Larvae
Hungry – fast feeding	Slow feeding	No feeding	Feeding on buried dung
Danger zone			Danger zone

Seasonal activity



With-holding periods*

Cattle continue to produce toxic dung for 2-3+weeks after treatment



Toxic dung remains toxic until it decomposes and can kill adult beetles, reduce number of eggs laid and kill larvae

Recommendations

1. Where possible, use beetle-friendly drenches
2. Use beetle-toxic chemicals only at a time of minimum risk to beetles
 - a. March-April, except if *G. spiniger* is present
 - b. September-October, until new species become established

* data from NHT-AGFORCE document *Consider your dung beetles when using parasiticides*: based on four species. The effects of toxic dung in autumn and spring on the over-wintering stages of summer beetles is not known