

## **The potential effect of Garlium® GEM HC as a tick repellent agent in backgrounding beef cattle.**

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### **Background**

Ticks play a serious role in cattle disease transmission and can cause poor animal productivity, especially in developing countries. Apart from different tick-borne diseases that can be transmitted from ticks to the host, some ticks can cause wounds on animals, which can develop secondary infections and become an abscess, or it may lead to fly strike, resulting in further complications.

Therefore, tick control has become an important part of the producers' management plan. Southern Africa, being mainly sub-tropical, is home to a large number of ticks. Plunge dips have been used for a long time, where animals swim through a dip treated with tick killing and repelling agents (acaricides). Other methods are spray rays, pour-on or vaccination. All these methods entail a financial investment by the producer and are labour intensive.

The strict short interval application of the acaricides by dip, spray rays or any other method is very successful in controlling tick-borne diseases. However, it can result in highly susceptible cattle populations because they may be not often enough exposed to ticks and the moment there is a breakdown in the application, heavy losses can follow. This can be overcome by strategic tick control, for example, where tick infestation is monitored and treated when it increases or when there are tick-related problems.

Adding a tick repellent feed supplement into the feed / lick can add value to this strategy. This can assist in the reduction of ticks and could enable the producer to apply acaricides less often and only when tick numbers increase above acceptable numbers. This will also reduce the risk of ticks building resistance to acaricides as the animals are more regularly exposed to low number of ticks. A tick repellent feed additive can also assist farmers to control ticks in more remote areas where regular manual tick treatments is more difficult to do.

Garlium GEM HC (Garlium) is a garlic based product, manufactured by Pancosma SA, a global company with their head office in Switzerland. Garlium is manufactured in Spain, and the manufactory site comply to GMP, Quality control and other European regulatory compliance. Garlium is registered at the Department of Agriculture in South Africa (V 27580).

Garlium was developed to be added into animal feed as an insect repellent, predominantly flies, midges etc. The active ingredients in Garlium (Garlic Oil and Garlic Powder) are converted in the body to allyl methyl sulphur, which is then absorbed into the blood of the animal and transported to different organs, including lungs and skin. This will give a garlic smell that would repel flying insects.

It was recently discovered that Garlium also seems to have a repellent effect on ticks when they attach to the animal. It is marketed as such in countries like Australia. As ticks play a significant role in the transmission of tick borne diseases in Southern Africa, it would be of great commercial value of Garlium can act as a viable tick repellent agent.



## The aim of the trial

A commercial trial was conducted to investigate the possible tick repellent effect of Garlium in beef cattle. Optimal Garlium inclusion levels were also determined during the trial.

## Trial design

The trial was conducted on a commercial farm in the Limpopo province (close to Naboomspruit). 80 post-weaned male beef cattle (weighing between 200 – 250kg) were randomly allocated to 4 groups of 20 animals each. There were 4 treatments (groups):

1. Control, receiving no Garlium
2. Garlium added to the normal diet of the cattle at 0.5 g/animal/day
3. Garlium added to the normal diet of the cattle at 1.5 g/animal/day
4. Garlium added to the normal diet of the cattle at 4.0 g/animal/day

The trial period was 64 days and the trial commenced on 1 Feb 2017. The commercial farm is situated in an area known for high tick infestation levels during summer months. Four extensive grazing camps with similar quality grazing were used in the trial. Animals had access to *ad lib* drinking water as well as *ad lib* natural grazing (summer grazing). A concentrate, containing the different levels of Garlium, were fed at 4 kg /animal / day. Ticks numbers were counted on day 1, 7, 14, 21, 42 and 64 of the trial. Tick counting was done on different areas on the left side of the animal.

## Results

**Table 1.** The effect different inclusion levels of Garlium had on the average nr of ticks on different areas of the left side of the body for the whole trial period

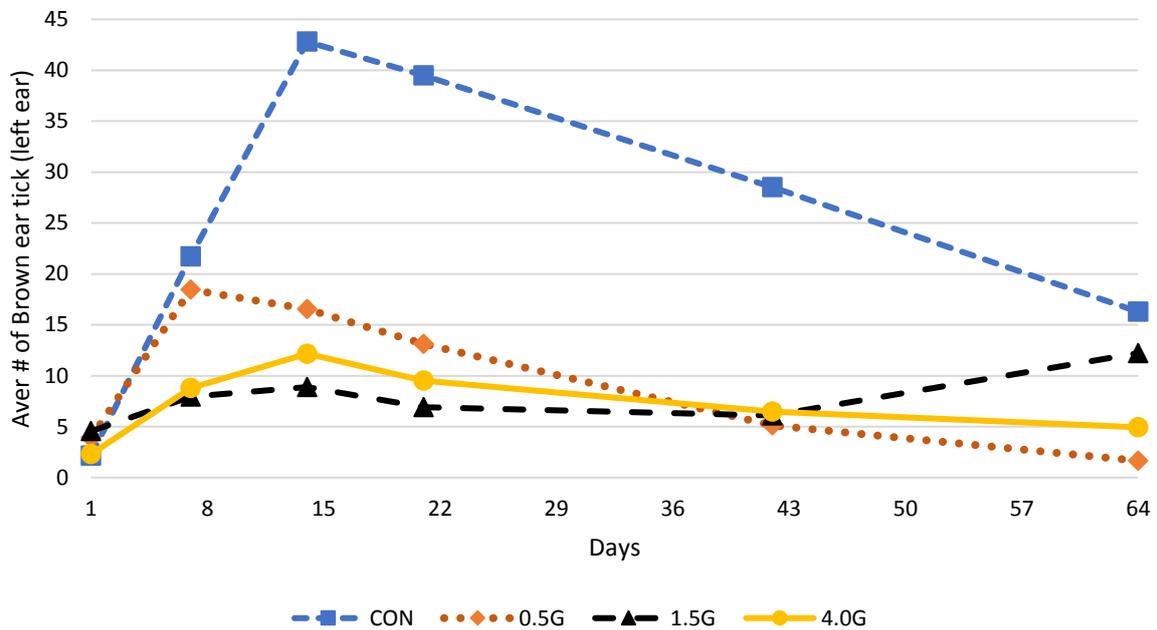
Area	Treatments				P-value
	CON	0.5G	1.5G	4.0G	
Neck	1.94 <sup>ab</sup>	2.86 <sup>a</sup>	1.34 <sup>bc</sup>	2.32 <sup>ac</sup>	0.04
Upper Body	0.56 <sup>a</sup>	0.34 <sup>ab</sup>	0.55 <sup>a</sup>	0.19 <sup>b</sup>	0.02
Under Body	3.55	4.37	4.42	3.84	0.66
Sheath	3.34 <sup>a</sup>	2.39 <sup>ab</sup>	2.31 <sup>ab</sup>	2.12 <sup>b</sup>	0.18
Testes	4.36	2.93	3.61	3.37	0.31
Inner leg	4.68	4.46	5.25	5.43	0.78
Under tail	5.5 <sup>a</sup>	12.62 <sup>b</sup>	7.86 <sup>c</sup>	7.78 <sup>c</sup>	< 0.001
Ear	25.8 <sup>a</sup>	10.15 <sup>b</sup>	8.42 <sup>b</sup>	8.24 <sup>b</sup>	< 0.001
Whole Body	49.73 <sup>a</sup>	39.96 <sup>b</sup>	33.75 <sup>c</sup>	33.3 <sup>c</sup>	< 0.001

<sup>a,b</sup> Means in the same row with different superscripts differ (P < 0.05).

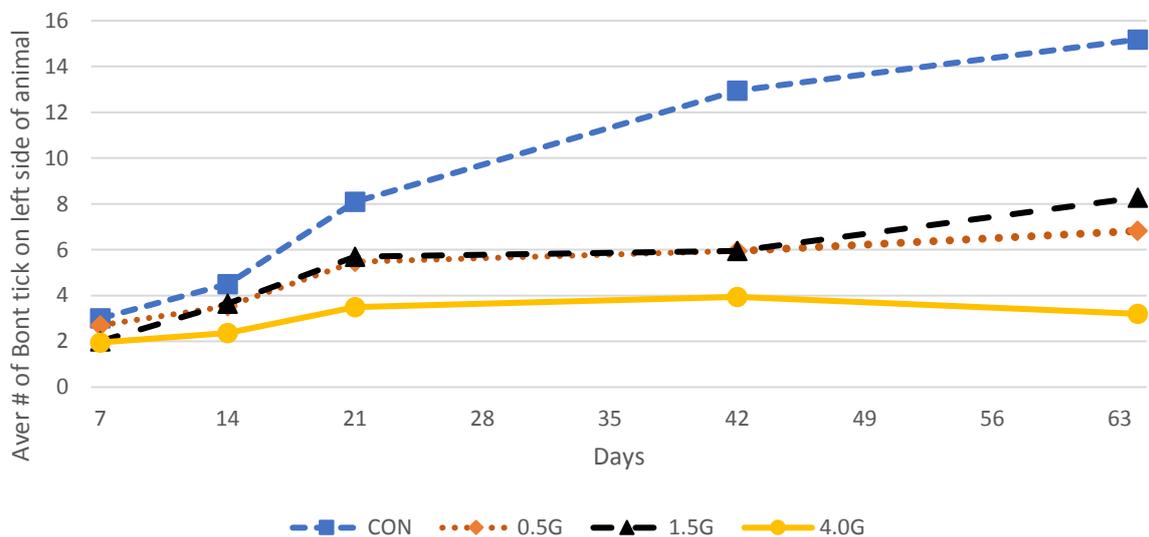
Treatments: CON = Control; 0.5G = 0.5g Garlium/h/d; 1.5G = 1.5 g Garlium/h/d; 4.0G = 4 g Garlium/h/d



**Fig 1.** The effect different inclusion levels of Garlicum had over time on the average Brown ear tick (*Rhipicephalus appendiculatus*) load.



**Fig 2.** The effect different inclusion levels of Garlicum had over time on the Bont tick (*Amblyomma hebraeum*) load.



## Conclusion

The trial results indicate that Garlium can assist in repelling ticks. This is especially valid for the Brown ear tick (Fig 1) and Bont tick (Fig 2). Overall average tick numbers for the whole trial period were also significantly reduced ( $P < 0.001$ ; Table 1). Controlling ticks in the inside of the ear, like the Brown ear tick, is more difficult and more labour intensive than controlling ticks on the back of the animal. Having a product that reduces the number of ticks, especially inside the ear, may assist the farmer to improve tick control.

Bont ticks can cause significant physical damage to the host animal due to their long mouth-parts of the Bont tick. This can result in loss of external ear parts or teats from mammary gland etc. If a cow loses one teat, the final body weight of the calf she weans can be 50 kg less due to less milk produced. Therefore, if a product like Garlium can assist in reducing the number of Bont ticks attached to the animal, it could have a positive effect on the health and growth of the animal.

Therefore, it can be assumed that Garlium GEM HC fed to beef cattle at 1.5 – 4.0 g/animal/day can be used to assist the cattle farmer in reducing the tick load on the cattle.

For more information, please contact Frans Hagg (072 037 0749, [frans@alliednutrition.com](mailto:frans@alliednutrition.com))

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Garlium® GEM HC Act 36 Reg nr: V 27580

