

This article will report on the results of three studies on tick resistance involving the Nguni breed in South Africa.

Tick resistance in the Nguni Breed

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Study One⁽¹⁾

Counts of engorged female ticks on naturally infested cattle over a 2 year period, showed that indigenous Nguni cattle harboured significantly fewer *Amblyomma hebraeum* (Bont tick), *Boophilus decoloratus* (Blue tick) and *Hyalomma* spp (Bont legged), during periods of peak abundance than either Bonsmara or Hereford cattle. Fewer abscesses, associated with tick bite, were also present in the Nguni cattle. Individual tick resistance indices, determined after artificial tick infestation in the field, could not be correlated with hair length, skin thickness or conglutinin titers. The consistently large percentage of Nguni cattle showing high tick resistance according to index determinations indicates a superior level of natural immunity in this breed. The relative incidence of individuals in high, medium and low resistance classes reflected an increase in resistance with exposure to ticks and the potential for the selection for tick resistance within all 3 breeds.

Table 1 indicates the percentage individuals of the three breeds classed into resistance levels according to field counts of engorged female ticks in the first year of the study⁽²⁾.

TABLE 1: Percentage individuals of the 3 breeds classed into resistance levels according to field counts of engorged female ticks.

Breed	Level of Resistance		
	Low (> 47 ticks)	Medium (47-15 ticks)	< High (15 ticks)
Nguni	0	22	78
Bonsmara	45	22	33
Hereford	100	0	0

* was calculated as follows: loss in weaning weight (Table 2) / (Number of one host ticks plus number of multi-host ticks)

Study 2⁽³⁾

Animals from the Bonsmara, Hereford and Nguni breeds that were used in Study 1, were also used in this study. The experimental group was never dipped from 1½ years to 3½ years of age. However, the udders of all the females were patch-treated with acaricidal ointment at 2-weekly intervals during periods of peak infestation to prevent udder damage and teat losses. Subsequently to Study 1 the effect of tick infestation of Hereford, Bonsmara and

Nguni cows on the weaning weights of their calves in a dipping versus non-dipping situation was investigated. All the females were mated to the same Nguni bull. Thus the Bonsmara and Hereford cows suckled Nguni-cross calves. The results are given in Tables 2 and 3.

TABLE 2: Comparison between the weaning weights (kg) of calves in a non dipping situation and when dipped every three weeks.

Breed	No dipping	Dipping	Differences
Hereford	137.2	166.7	+29.5**
Bonsmara	166.5	184.1	+17.6*
Nguni	164.7	169.1	+4.4

Difference calculated as dipping - no dipping

** = significant differences at 5% level; * = significant differences at 10% level

TABLE 3: Estimated number of engorged female ticks on each breed during lactation, and the effect of each engorged female tick on the weaning weight of calves.

Table 3: Breed	Number of one-host ticks	Number of multi-host ticks	Effect on one engorged female tick*
Hereford	3 136.5	164	8.9 g
Bonsmara	2 029.5	164	8.0 g
Nguni	430.5	82	8.6 g

Breed had a major effect on the level of tick infestation, Herefords being most susceptible and Ngunis least. The productivity of Nguni cows, as measured by the weaning weight of their calves was also least affected. The effect of infestation on the productivity of Hereford cows was the greatest, and that on the Bonsmara cows was intermediate. It was estimated that each engorged female tick (predominantly *Boophilus decoloratus*) caused a reduction of 8.9 g, 8.0 g and 8.6 g in the weaning weights of calves from Hereford, Bonsmara and Nguni cows respectively. The effect of infestation on the productivity of the Nguni cows was nevertheless small, because a limited number of ticks fed to maturity on this breed due to its natural resistance.

Study 3⁽⁴⁾

Cows of the Simmentaler, Bonsmara, Afrikaner, Brahman and Nguni breeds were kept together on the same pastures, and were not subjected to any acaricide treatment. Each breed consisted of five animals, and ticks were removed at monthly intervals following natural infestation. These monthly tick collections were made over a 30 month period including three summers and two winters.

A comparison of the number of ticks removed from the different breeds revealed varying infestation with ticks among these breeds. Nguni cattle carried the lowest number of ticks and probably possess the highest level of resistance. The Simmentaler showed the lowest level of resistance regardless of the specie of ticks or the season. The resistance levels of the Afrikaner, Bonsmara and Brahman is much higher than that of the Simmentaler, and is closer to that of the Nguni than to the Simmentaler. The results on the three most common ticks are summarized in Table 4.

TABLE 4: Three most common ticks.

Tick Specie	Breed				
	Simmentaler	Brahman	Afrikaner	Bonsmara	Nguni
Bont	251 (249%)	105 (46%)	103 (43%)	77 (7%)	72
Blue	579 (2 216%)	37 (48%)	32 (28)	28 (12%)	25
Bont legged	245 (295%)	109 (76%)	99 (60%)	68 (10%)	62

(%) indicates the percentage deviation from the Nguni
 Bont tick - *Amblyomma hebraeum* Blue tick - *Boophilus decoloratus*
 Bont-legged tick - *Hyalomma marginatum rufipes* and *H. truncatum*

Studies 1 and 2 were conducted on the farm “Loskop Suid” near Groblersdal in Mpumalanga. Study 3 was conducted on the farm “Delftzyl” near Roedtan in Limpopo.

REFERENCES

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* This article is available in Xhosa and Tswana from the society.



Abscess caused by a tick bite.



Tick counts done on a Nguni

