

EFFECTS OF DIPPING FOR TICK CONTROL ON LIVEWEIGHT
CHANGES IN ZEBU CROSSBRED HEIFERS IN THE CENTRAL BURNETT

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SUMMARY

Bos indicus-*Bos taurus* heifers subjected to dipping and non-dipping regimes at each of three different sites in the Central Burnett showed no differences in liveweight change due to treatment from November 1979 to May/June 1980.

Generally tick numbers were low and this was probably a reflection of seasonal conditions. But, there was circumstantial evidence that the resistance of the heifers was a contributing factor.

This trial supports previously published results on this subject and gives local support to biological control of tick populations.

INTRODUCTION

The use of six to eight strategic tickicide treatments annually supported by, or in combination with pasture spelling was the basic recommendation for tick control during the late 1950's and the 1960's (Woolcock 1968). while *Bostaurus* cattle were the dominant genotype this was an effective means of tick control but required considerable use of chemicals and labour. Both are expensive and chemical residues are a potential threat to overseas markets.

Since this period several workers reported a lack of response in terms of liveweight change in *Bosindicus*-*Bos taurus* growing cattle from tickicide treatment. Since the mid 1970's there has been a marked swing by industry advisers from chemical and pasture spelling recommendations, to biological control through breeding tick resistant cattle.

Bos indicus-*Bos taurus* cattle are still treated with tickicides more than research results indicate are necessary (Elder 1979).

Further evidence is presented here in support of minimal tickicide treatment for *Bosindicus*-*Bos taurus* growing cattle. Additional evidence is of value to industry advisers who have been set the task of advocating managerial changes that are often seen by producers as a reversal of previous advice.

MATERIALS AND METHODS

Three groups of heifers from three locations in the Central Burnett were divided at random into two groups. At each site one group was not dipped during the November-June period of 1979/80, while the other group was dipped five to six times depending on location.

The heifers were all *Bosindicus*-*Bos taurus* which consisted of:

- Site 1. Brian Pastures, Gayndah - Sahiwal-Hereford.
- Site 2. Narayen, Mundubbera - Belmont Red.
- Site 3. Mimosa, Mundubbera - Droughtmaster.

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At each location, control and treated cattle grazed together at stocking rates of: 1 beast to 4 ha of native pasture at Site 1; 1 beast to 1 ha of improved pasture at Site 2; and 1 beast to 8 ha of native pasture at Site 3.

At Site 1 *Bostaurus* cows were also in the paddock but at the other sites only trial animals grazed the paddocks.

Live weight and standard tick counts were recorded for trial animals in November 1979, one or two times during the trial and in May/June 1980.

The data were analysed by the least squares method (Harvey 1960).

RESULTS

Rainfall immediately preceding and during the trial period was approximately 65 percent of average. Site 1 was least affected due to comparatively higher rainfall and a larger quantity of pasture available in November 1979. Site 3 was worst affected by seasonal conditions.

Liveweight performance - Site 1

Table 1 summarises liveweight performance of the heifers at Brian Pastures.

TABLE 1 Effect of tickicide treatment on live weight - Site 1

Treatment	No.	Live weight (kg)			
		13/12/79	6/1/80	16/4/80	4/6/80
Control	55	214	229	270	251
Dipped	54	212	225	272	253
Residual Std. Dev.	104*	10.2	11.6	12.6	12.4

* Residual degrees of freedom

Initial live weight on November 14, 1979 was 188 kg at 14 months of age. There was no significant effect attributable to the tickicide at any point during the trial.

Tick counts per side of the control group ranged from less than one to a peak of 18 in April. Hereford cows in the trial paddock carried up to 3.5 times more ticks than the *Bosindicus*-*Bos taurus* heifers.

These heifers were both first and second generation Sahiwal-Hereford. There was no treatment by generation interaction indicating that both generations had similar tick resistance.

Liveweight performance - Site 2

Table 2 summarises liveweight performance of the heifers at Narayen.

TABLE 2 Effect of tickicide treatment on live weight - Site 2

Treatment	No.	Live weight (kg)	
		22/2/80	12/6/80
Control	49	296	346
Dipped	48	296	344
Residual Std. Dev.	94*	10.5	13.9

* Residual degrees of freedom

Initial live weight on November 3, 1979 was 230 kg at 14 months of age. Obviously treatment had no significant effect on liveweight at either point in the trial.

Tick counts in the control group averaged less than one per side at each of the three dates. While seasonal conditions were probably the major influence on tick levels there is circumstantial evidence to suggest that the tick resistance of these heifers accentuated the reduction in tick numbers. Hereford cows in an adjoining paddock carried markedly higher tick burdens on six occasions during the trial.

Liveweight performance - Site 3

Table 3 summarises liveweight performance at Mimosa.

TABLE 3 Effect of tickicide treatment and pregnancy/lactation status on live weight - Site 3

Class	No.	Live weight (kg)	
		28/2/80	27/5/80
<u>Effect of treatment</u>			
Control	37	319	272
Dipped	39	333	278
<u>Effect of pregnancy/ lactation status</u>			
Pregnant/lactating	20	319	260
Open	56	333	389
Residual Std. Dev.	71*	33.1	30.0

* Residual degrees of freedom

There was no significant treatment effect on either date. The pregnant/lactating heifers were significantly heavier than open heifers at May 27 1980 ($P < .005$) but not at February 28 1980. A significant ($P < .01$) treatment by pregnancy/lactation status on February 28 1980 liveweight confounds treatment results at this date. The most likely explanation is that differing time of calving of heifers in the control and dipped groups caused this interaction. live weights of the open heifers on February 28 1980 were, control 338 kg and dipped 328 kg.

Initial weight of these heifers was 238 kg at approximately 26 months of age on November 1 1979.

Tick counts for the control group were about one per side at each observation. Relatively high liveweight gains during November-February (.80 kg/d for open heifers) indicated satisfactory seasonal conditions and an opportunity for movements in tick numbers. Marked liveweight losses from February to May (.50 kg /d for open heifers) is consistent with seasonal conditions depressing tick populations.

DISCUSSION

These results support the recommendation for minimal tickicide treatment for growing cattle. This work was done over a range of pasture and seasonal conditions with differing sources of *Bosindicus* component. It gave the same result at each site and is an agreement with previously published results.

The generally low tick populations are most likely a result of the prevailing seasonal conditions. However the circumstantial evidence from the Hereford cows at two sites indicates that the resistance of the *Bosindicus*-*Bos taurus* heifers is contributing to the low tick population.

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