NATURAL INFESTATION OF BEEF CATTLE FEMALES BY EXTERNAL PARASITES IN SOUTHERN BRAZIL

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INTRODUCTION

Due to losses caused by external parasites to cattle industry, chemical-control methods applied used, and when used without discrimination they can result in high costs, residues in beef and milk, and quick development of resistance to the active principle (Fraga et al., 2003). However, studies (Utech et al., 1978; Oliveira and Alencar, 1990; Teodoro et al., 1994; Silva et al., 2005) have shown breed or genetic group differences in parasite resistance, suggesting that crossbreeding can be used for their control. The objective of this study was to evaluate the degree of natural infestation of beef cattle females of different genetic groups to tick (*Boophilus microplus*), horn fly (*Haematobia irritans*) and beef- worm (*Dermatobia hominis*).

MATERIAL AND METHODS

The data used in this study are from animals owned by Southeast - Embrapa Cattle, located in São Carlos County, central region of the State of São Paulo, Brazil. The climate of the region is tropical Cwa, according to Köeppen, with warm weather and dry winter, and in the last 13 years, June and July were the coldest months (18.3°C), February the warmest (23.6°C), August the driest (20 mm), and January the rainiest (256 mm) month.

Six to ten external parasite counts were done from July 2003 to December 2004, in 184, 153, 123 and 120 Nelore (NE), Canchim (5/8 Charolais + 3/8 Zebu) x Nelore (CN), Angus x Nelore (AN) and Simmental x Nelore (SN) naturally infested females, of several physiological states (calves, pregnant and open heifers, primiparous and pluriparous cows with and without a calf), respectively. These animals were maintained on pastures (*Brachiaria* and *Panicum*), receiving health care as they needed, but there was no parasite control during the experiment. Ticks 4.5 mm or longer on one side of the animals, horn flies on the dorsal region, and beef-worm all over the body were counted on animals restrained in a chute. The data, transformed to $\log_{10}$ (n + 1), were analyzed by the least squares method, with models that included effects of genetic group (GG), animal within GG, year-season (YS), and GG x YS interaction.

RESULTS AND DISCUSSION

All effects included in the models affected ($P<0.01$) all traits studied. Means (not transformed) for each genetic group x year-season are presented in Figure 1. Differences between groups depended on year-season. During the periods (year-season) of greater tick infestation, differences between genetic groups became prominent, and animals with higher proportion of *Bos indicus* (NE and CN) were less infested than the ones with higher proportion of *Bos taurus* (AN and SN). Nelore females showed lower infestation than all other genetic groups in all year-season. Lemos et al. (1985), Oliveira et al. (1989), Oliveira and Alencar (1990), Teodoro et al. (1994), Cardoso (2000), Santos Júnior et al. (2000) and Silva et al. (2005) observed different tick infestation among genetic groups for animals from several breed compositions. These authors verified higher infestations on animals with higher proportion of *Bos taurus*.

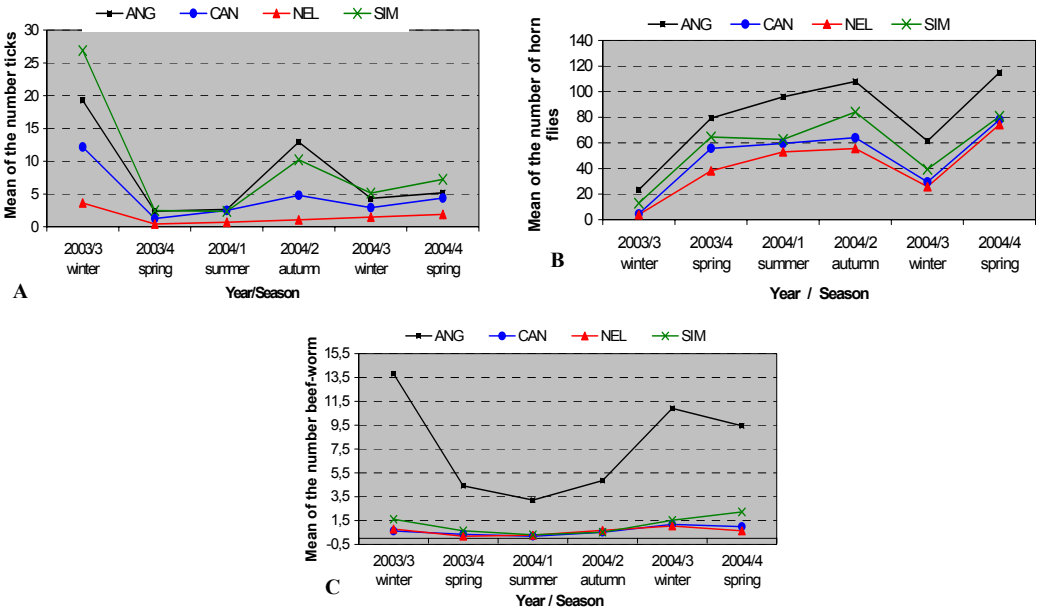

Figure1. Means of each genetic group x year-season for cattle tick (*Boophilus microplus*) (A), horn fly (*Haematobia irritans*) (B) and beef-worm (*Dermatobia hominis*) (C)

Nelore animals were less infested with horn flies than CN animals during spring of 2003, but infestation was similar during the other seasons. During summer and spring of 2004, SN, NE and CN animals were similarly infested. The SN animals were more infested with beef-worm than NE and CN in winter of 2003 and spring of 2004 only. For both horn fly and beef-worm, there was a tendency for AN animals to show higher infestations than NE, CN and SN ones in all seasons, especially the infestation by beef-worm (Table 1). Oliveira and Alencar (1990), evaluating animals of six Holstein x Guzerat composition, observed higher infestation by beef-worm on the high Holstein proportion animals.

When year-season is considered, the differences also depended on genetic group, for all three parasites. Studies conducted in Brazil show variable results. Oliveira et al. (1989) reported higher infestations of tick during autumn and winter, and Andrade et al. (1998) observed higher infestations in autumn, while Fraga et al. (2003) reported that the peak of infestation occurred in summer. Fraga et al. (2005) observed lower infestations of horn flies in winter and higher in spring. Oliveira et al. (1990) observed higher infestations of beef-worm at the beginning of the rainy season (spring) as compared to summer.

TABLE 1. Estimated means of transformed number of ticks (NT), number of horn flies (NF) and number of beef-worm (NBW), according to genetic group and year-season

	Year-season						
	20033 Winter	20034 Spring	20041 Summer	20042 Autumn	20043 Winter	20044 Spring	Overall
Genetic group				NT			
Nelore	0.97^{C}	0.24^{C}	0.28^{B}	0.43^{C}	0.53^{C}	0.67^{C}	0.52^{C}
Canchim x Nelore	1.63^{B}	0.49^{B}	0.69^{A}	1.17^{B}	0.89^{B}	1.27^{B}	1.02^{B}
Angus x Nelore	2.35^{A}	0.83^{A}	0.81^{A}	2.12^{A}	1.16^{A}	1.43^{AB}	1.45^{A}
Simmental x Nelore	2.51^{A}	0.88^{A}	0.76^{A}	1.88^{A}	1.22^{A}	1.60^{A}	1.47^{A}
Overall	1.86^{a}	0.61^{e}	0.64^{e}	1.40^{b}	0.95^{d}	1.24^{c}	1.11
Genetic group				NF			
Nelore	1.29^{B}	3.03^{B}	3.25^{B}	3.39^{C}	2.60^{C}	3.93^{B}	2.91^{B}
Canchim x Nelore	1.25^{B}	3.50^{A}	3.33^{B}	3.60^{B}	2.79^{C}	3.89^{B}	3.06^{B}
Angus x Nelore	2.37^{A}	3.81^{A}	3.91^{A}	4.11^{A}	3.54^{A}	4.32^{A}	3.68^{A}
Simmental x Nelore	2.17^{A}	3.65^{A}	3.46^{B}	3.89^{A}	3.19^{B}	4.03^{B}	3.39^{A}
Overall	1.77^{e}	3.50^{c}	3.48^{c}	3.75^{b}	3.03^{d}	4.04^{a}	3.26
Genetic group				NBW			
Nelore	0.35^{C}	0.10^{B}	0.14^{B}	0.30^{B}	0.37^{B}	0.29^{D}	0.26^{C}
Canchim x Nelore	0.28^{C}	0.12^{B}	0.10^{B}	0.21^{B}	0.43^{B}	0.44^{C}	0.26^{C}
Angus x Nelore	2.19^{A}	1.10^{A}	0.85^{A}	1.27^{A}	2.01^{A}	1.99^{A}	1.57^{A}
Simmental x Nelore	0.60^{B}	0.29^{B}	0.14^{B}	0.23^{B}	0.49^{B}	0.72^{B}	0.41^{B}
Overall	0.85^{a}	0.40^{c}	0.31^{d}	0.50^{b}	0.83^{a}	0.86^{a}	0.63

Different capital letter in column indicates significant difference for genetic group within year-season, by t test ($P \leq 0.05$).

Different small letter in line indicates significant difference for year-season within genetic group, by t test ($P \leq 0.05$).

CONCLUSIONS

Differences among genetic groups for cattle tick, horn fly and beef-worm infestations depend on year-season of counting. However, in general, Nelore females are less infested by cattle tick than females of the other genetic groups, while Angus x Nelore females show higher infestation by beef-worm than females of the other genetic groups.

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