

**INFLUENCE OF SHADOW AVAILABILITY ON SPERMATIC MORPHOLOGY OF BRAHMAN BULLS [*Bos taurus indicus*] BRED AT SOUTHEAST BRAZIL**

(INFLUÊNCIA DA DISPONIBILIDADE DE SOMBRA A PASTO SOBRE A MORFOLOGIA ESPERMÁTICA DE TOUROS DA RAÇA BRAHMAN (*Bos taurus indicus*) CRIADOS NA REGIÃO SUDESTE DO BRASIL)

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**ABSTRACT**

Under heat stress conditions, testicular degeneration can occur, even on zebu animals. Therefore, the aim of this work was to verify the occurrence of any possible effect of shadow availability on pasture on spermatic morphology of Brahman Bulls on Brazil Southeast. Five animals were allocated on pasture with shadow availability, and five bulls were allocated on pasture without any kind of shadow. No difference was observed ( $P>0.05$ ) in any of the characteristics analyzed when Brahman bulls were maintained on pastures with or without shadow availability.

**Keywords:** ambience, heat stress, semen morphology, shading

**RESUMO**

Sob condições de estresse térmico, pode ocorrer degeneração testicular, mesmo em zebuínos. Dessa maneira, esse estudo objetivou verificar a ocorrência de algum possível efeito da disponibilidade de sombra sobre a morfologia espermática de touros da raça Brahman criados na Região Sudeste do Brasil. Cinco animais foram alocados em pasto com disponibilidade de sombra enquanto cinco foram alocados em pasto sem qualquer tipo de sombra. Não houve diferenças estatísticas ( $P>0,05$ ), nas características analisadas, entre os grupos experimentais.

**Palavras-chave:** ambiência, estresse térmico, morfologia espermática, sombreamento.

**Introduction**

Similarly to others tropical countries, in southeast Brazil, bovines are bred under environmental conditions of extensive system.

Such breed system type may lead to heat stress even on zebu animals. Under heat stress conditions, testicular degeneration can occur.

Hence there is a search for animals that are heat tolerant.

In general, there is no need to completely eliminate environmental stress for bovine. On the other hand, it's important to minimize it (e.g. alternatives managements), allowing the animals to adapt themselves<sup>[1]</sup>. A simple shade structure can reduce the radiant heat load on an animal at least 30% by intercepting the direct solar radiation<sup>[2]</sup>. Therefore, the aim of this study was to verify the occurrence of any possible effect of shadow availability on pasture on spermatic morphology of Brahman bulls bred at southeast Brazil.

### Material and Methods

The experiment was conducted at Fazenda São Leopoldo Mandic, located at Descalvado city, state of São Paulo, between March and May of 2010. Ten Brahman bulls aging between 24 and 30 months were used in this work. Before separating the animals into the experimental groups, three semen samples were collected from each animal for the biological semen evaluation, where all animals begin the study with the same chance to recover its semen stock. Moreover, the semen exam of those three samples were used classify the animals by its semen quality<sup>[3]</sup>. Then the bulls were separated into two uniform groups: five animals were allocated on pasture with shadow availability and the other five were allocated on pasture without any kind of shadow.

Semen samples were collected each week and analyzed at Biometeorology and Ethology Laboratory from Animal Science and Food Engineering Faculty of São Paulo University. For the analysis were used the humidity chamber method. The morphological defects were classified into big Defects, small Defects and total of defects.

For environmental analysis two black globes, one under shadow and the other exposed to the sun, one thermo hygrometer and one anemometer were used. The Black-Globe-Humidity Index (BGHI) was calculated since it is the best indicator of heat stress for bovines managed outdoors<sup>[4]</sup>.

Data obtained from experimental proceedings were analyzed by Statistical Analysis System program<sup>[5]</sup>.

### Results

The BGHI for the collection days are shown in Figure 1.

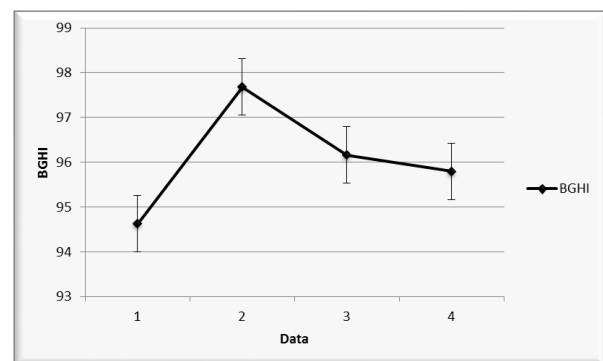


Figure 1 – Black-Globe-Humidity Index (BGHI) from experimental collections days at the warmest hours in the day, between March and May of 2010.

**Big Defects**

No differences were observed ( $P>0.05$ ) between the treatments (Figure 2) or through the collections.

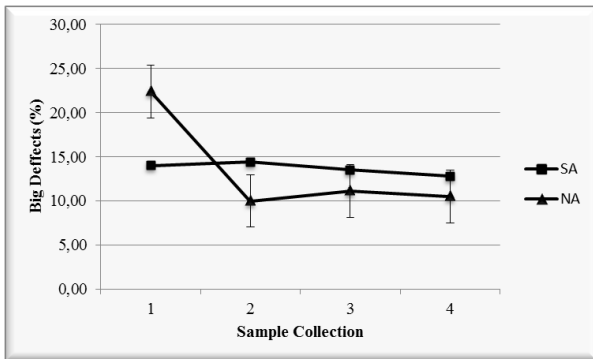


Figure 2 – Big defects. Means values ( $\pm$ standard error) of spermatozoa big defects of Brahman Bulls bred in Southeast Brazil on the different treatments: Shadow Available (SA) or Shadow Not Available (NS) on each data collection.

**Small Defects**

There were no differences ( $P>0.05$ ) between the treatments (Figure 3), nor between collections for small defects.

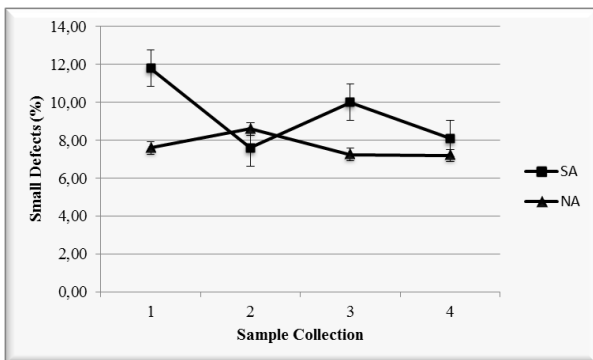


Figure 3 – Small Defects. Means values ( $\pm$ standard error) of spermatozoa Small Defects of Brahman Bulls bred in Southeast Brazil on the different treatments: Shadow Available (SA) or Shadow Not Available (NS) on each data collection.

**Total of Defects**

There were no differences between the treatments ( $P>0.05$ ) nor between collections

during the experiment, as shown in Figure 4. This result was expected, since there were no differences on big or on small defects.

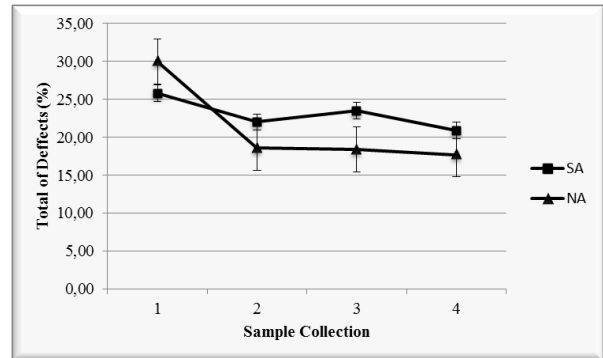


Figure 4 – Total of defects. Means values ( $\pm$ standard error) of spermatozoa Total of Defects of Brahman Bulls bred in Southeast Brazil on the different treatments: Shadow Available (SA) or Shadow Not Available (NS) on each data collection.

**Discussion**

The results reported in this work are similar to those reported by Nichi et al. (2006)<sup>[6]</sup> when working with Nelore bulls at Center West Brazil’s summer, with means of 10.1% for big defects.

Tarragó (2009)<sup>[7]</sup> reported very similar results for small defects when testing Nelore bulls bred at the same region, ranging from 5.5 to 21.5% and from 2.0 to 11.6% for the groups with or without shadow availability respectively.

Finally, the total of defects are similar to those reported by Tarragó (2009)<sup>[7]</sup>, who reported no differences between the treatments with or without shadow availability.

Therefore, the results obtained in this work reported no differences between the treatments up to the period of the year that

experiment was conducted. The BGHI indicates mild temperatures even under solar radiation.

### Conclusions

It is concluded that the availability of shadow on pasture do not affect the semen morphology, neither positively nor negatively, under the experimental conditions.

*reprodutivas de touros da raça Nelore*, in *Departamento de Reprodução Animal - Faculdade de Medicina Veterinária e Zootecnia*. 2009, Universidade de São Paulo: São Paulo. p. 92.

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