



Scrotum Surface Infrared Thermography Associated with Semen Quality of Buffaloes (*Bubalus bubalis*)

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INTRODUCTION

This study aimed to assess the association between scrotum surface temperature measured by infrared thermography (IRT) and semen quality of buffaloes (*Bubalus bubalis*) reared in a tropical rainforest area. IRT was employed for being a quick, precise, non-invasive method that can help understand scrotum/testicle thermoregulation in bulls in the Amazon. The increase in scrotum/testicle temperature is associated with lower semen quality and fertility in bulls when the variation is above 6 °C.

MATERIALS AND METHODS

Eleven adult male crossbred Murrah x Mediterranean buffaloes had their scrotum temperatures measured monthly. Semen samples underwent analyses of progressive motility (Mot, %), vigor (Vig, 0-5), gross motility (Turb, 0-5), volume (Vol, mL), and sperm concentration (Conc, $\times 10^9$ spz/mL), besides plasma membrane integrity (PMI, %) assessment by the eosin-nigrosin staining technique.



Figure 1 - Buffalo bull used in the experiment

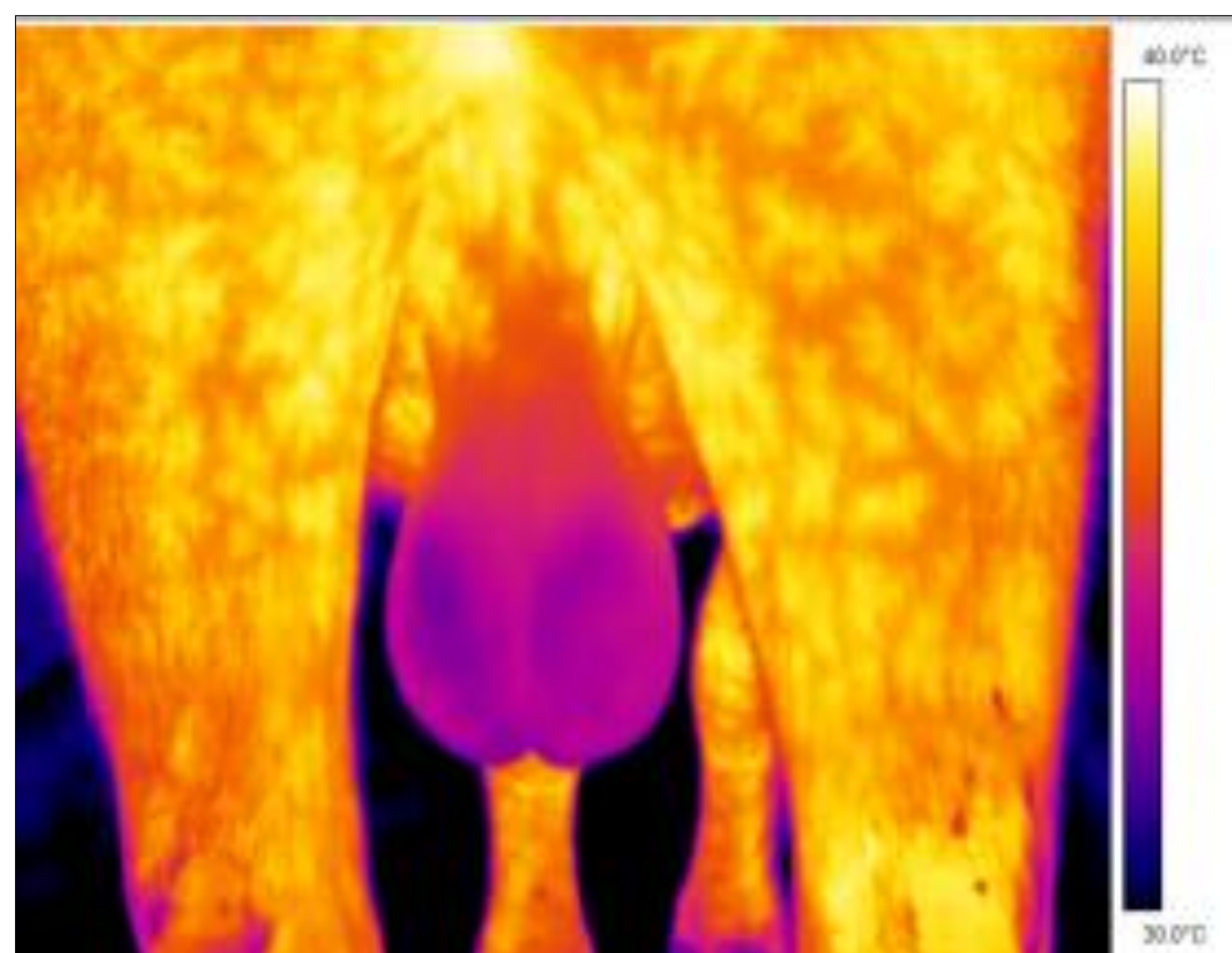


Figure 2 - Thermographic image of buffalo bull testicle



Figure 3 - Buffalo bull semen collection

RESULTS AND DISCUSSIONS

Mean scrotum surface temperature was 4.6 °C below the mean body temperature of 38.5 °C. These results show the animals were in favorable scrotum/testicle thermoregulation conditions. The data match the literature, which reports bull testicles must be 2 to 6 °C below body temperature for optimal semen quality. The mean scrotum temperature was 34.0 °C, showing that semen parameters were within acceptable levels of motility ($\geq 30\%$) and sperm morphology ($\geq 70\%$ normal spermatozooids). The mean values of motility of 67.8, vigor of 3.0, gross motility of 2.4, volume of 2.4, concentration of 1,305.1, and PMI of 68% highlight the importance of IRT for being a non-invasive technique that helps assess semen quality in buffalo herds in the Amazon.

CONCLUSION

We conclude that IRT can assist in the andrologic assessment of buffalo bulls.

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