

## THERMAL COMFORT AND EFFICIENCY OF FIXED TIME ARTIFICIAL INSEMINATION IN DAIRY BUFFALOES IN SILVOPASTORAL SYSTEMS IN THE EASTERN AMAZON

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This experiment was developed in U.F.P.A. "Senador Álvaro Adolpho", of Embrapa Eastern Amazon, Belem, Para State, Brazil (1°25c S 48°26c W), under hot and humid conditions (Afi climate type - Köppen). The aim of this research was to evaluate the use of silvopastoral systems (SSP's) as management tool to provide animal comfort to dairy buffaloes and increase their reproductive efficiency after the used artificial insemination in fixed time. Two different SSP's were used during Phase 1 (April to June), characterized by intense rainfall and Phase 2 (September to November), characterized by mild rainfall. Heart rate (HR), respiratory rate (RR), rectal temperature (RT) and ruminal movement (RM) were measured at 9:00 A.M. Animal Comfort Index (ACI) was calculated as  $ACI = RT/38.33 + RF/23$ . Animal received two different treatment for oestrus synchronization: SSP 1/Ovsynch, SSP 2/Ovsynch (Ovsynch based protocol), SSP 1/Prog and SSP 2/Prog (Ovsynch + 1g of intravaginal progesterone). Ovaries of all females buffaloes were scanned by ultrasound in D0, D7 and D9 and females were inseminated on D10 (day of synchronization). The averages of HR were  $57.35 \pm 8.24$  beats/min in Phase 1 and  $62.48 \pm 7.79$  beats/min in Phase 2 ( $P < 0.01$ ). The averages of RF were of  $25.66 \pm 10.53$  mov/min in Phase 1, and  $33.38 \pm 18.23$  mov/min in Phase 2 ( $P < 0.01$ ). Animals kept in SSP 1 presented higher values of RT compared to the SSP 2 ( $39.02 \pm 0.53$  °C and  $38.65 \pm 0.41$  °C,  $P < 0.01$ ). The ACI average ranged from 1.89 to 3.55. During Phase 1, ACI ranged from 1.89 to 2.42 (mean  $2.12 \pm 0.46$ ); in Phase 2, ACI ranged from 1.91 to 3.55 (mean  $2.46 \pm 0.79$ ). Significant difference was observed between Phases ( $P < 0.01$ ). Dominant follicle diameter on D9 was higher on progesterone treated animals ( $10.40 \pm 1.22$  mm vs.  $12.21 \pm 3.42$  mm,  $P = 0.05$ ). Overall pregnancy rate was 48.21%, corresponding to Phase 1 = 56.66% and Phase 2 = 38.46% (SSP1/Ovsynch: 40.0%; SSP2/Ovsynch: 38.46%; SSP1/Prog: 46.66% and SSP2/Prog: 69.23%;  $P > 0.05$ ). These results emphasize importance of physical environment management for buffalo's production in the Eastern Amazon which can avoid energy expenditure for animal thermoregulation and to allow shifting reproductive rates.

**Keywords:** Buffalo. Bioclimatology. Silvopastoral systems. Artificial insemination. Animal reproduction. Amazon-Brazil.