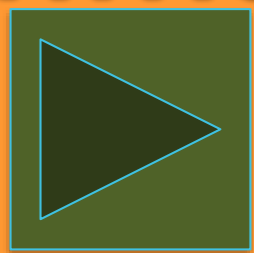


# Effect of hair characteristics on vaginal temperature under hot and humid conditions in an Angus-Brahman multibreed herd.



Abstract #473686



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## Introduction

Thermal stress is a major limiting factor of production efficiency in beef cattle. Thermal tolerance is influenced by many factors, including breed and hair coat properties.

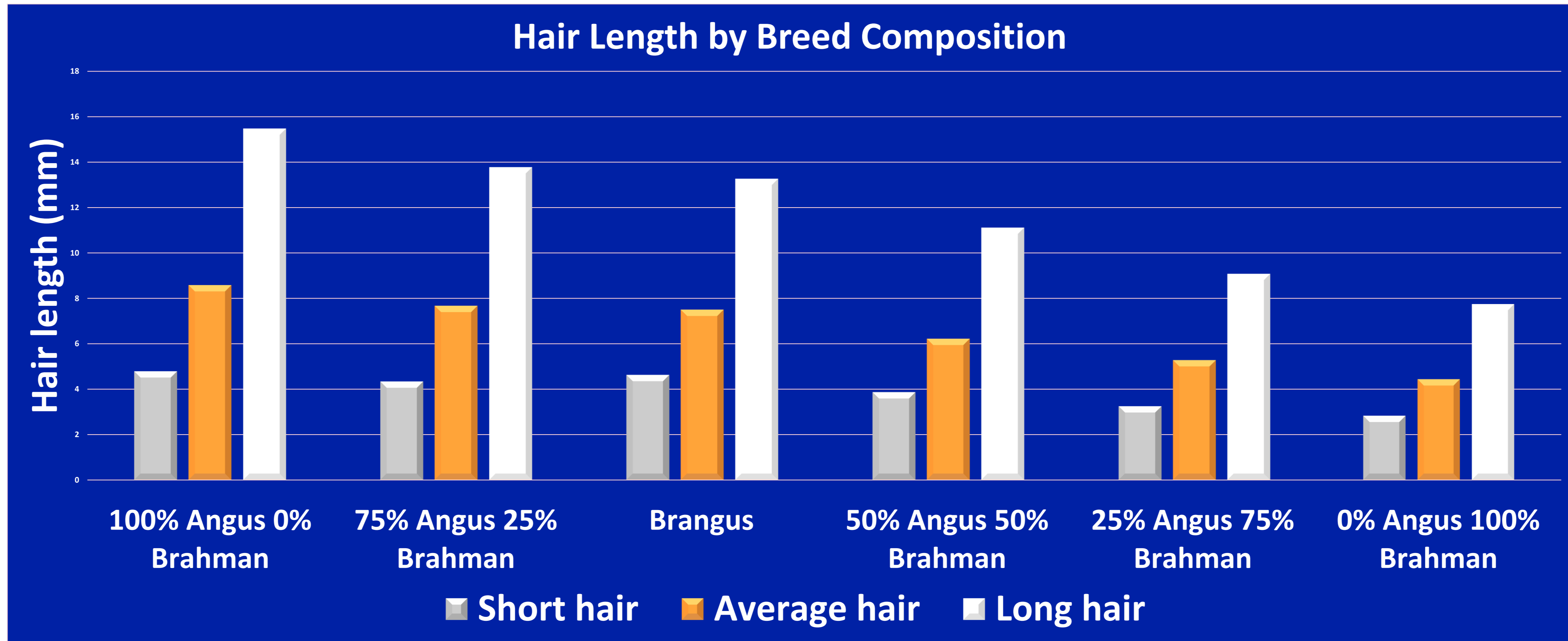


## Conclusions

Hair length across all three measurement tends to decrease as Brahman percentage increases. While both breed composition and hair characteristics influence vaginal temperature under hot, humid conditions, breed composition also influences hair characteristics.

## Results

Vaginal temperatures during low and high THI were evaluated using generalized linear models with breed group and coat score as fixed effects. Hair length (long, short and overall) was different among the breed groups with the 100% Brahman group having the shortest hair. During low THI breed composition, coat score, average hair length, short hair length and long hair length were found to have significant effects ( $P < 0.05$ ) on vaginal temperature. During high THI only the three hair length measurements were found to have significant effects on vaginal temperature. Hair diameter was not found to have an effect on vaginal temperature at either THI status.

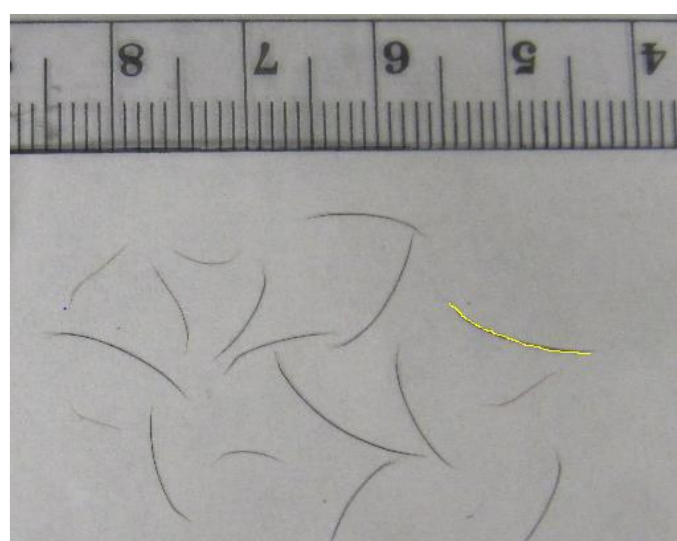


## Materials and Methods

Vaginal temperature was measured at 5-min intervals for 5 days in 113 heifers from a multibreed herd (ranging from 100% Angus to 100% Brahman). Ambient environmental conditions monitored using HOBO data loggers were used to calculate a temperature humidity index (THI). The coat score was scored as:



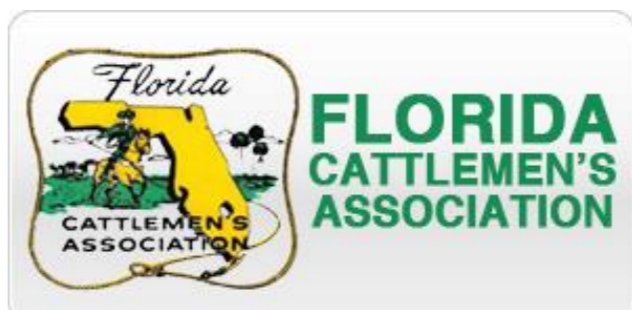
Hair samples were measured for length and diameter using ImageJ software.



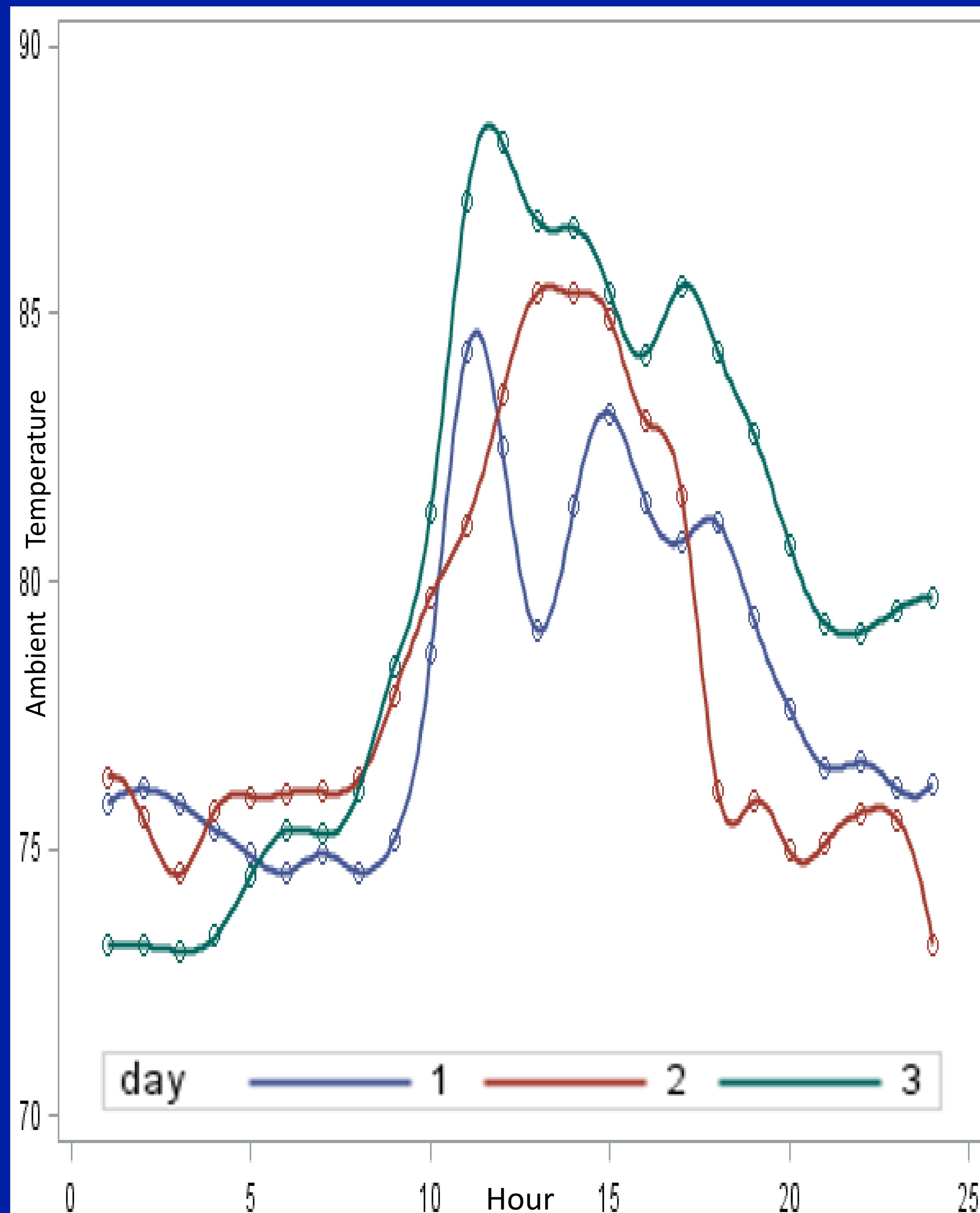
## Acknowledgements



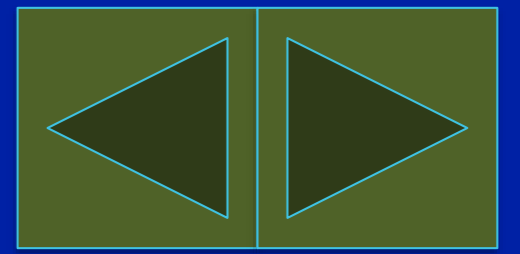
USDA-NIFA Grant **2017-67007-26143** and UF ANS Hatch Project



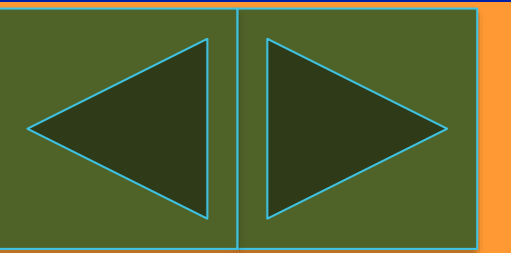
# Materials and Methods



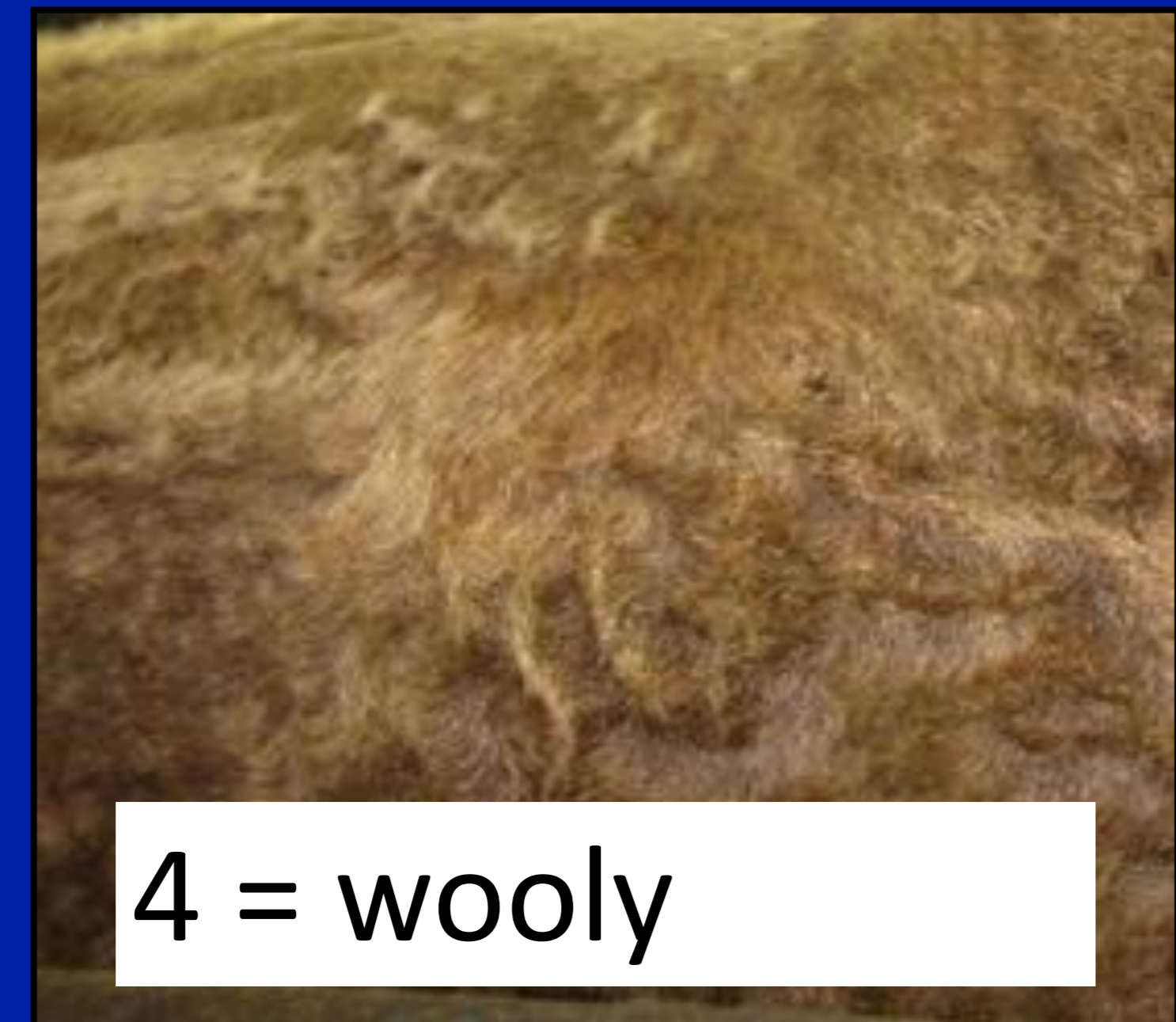
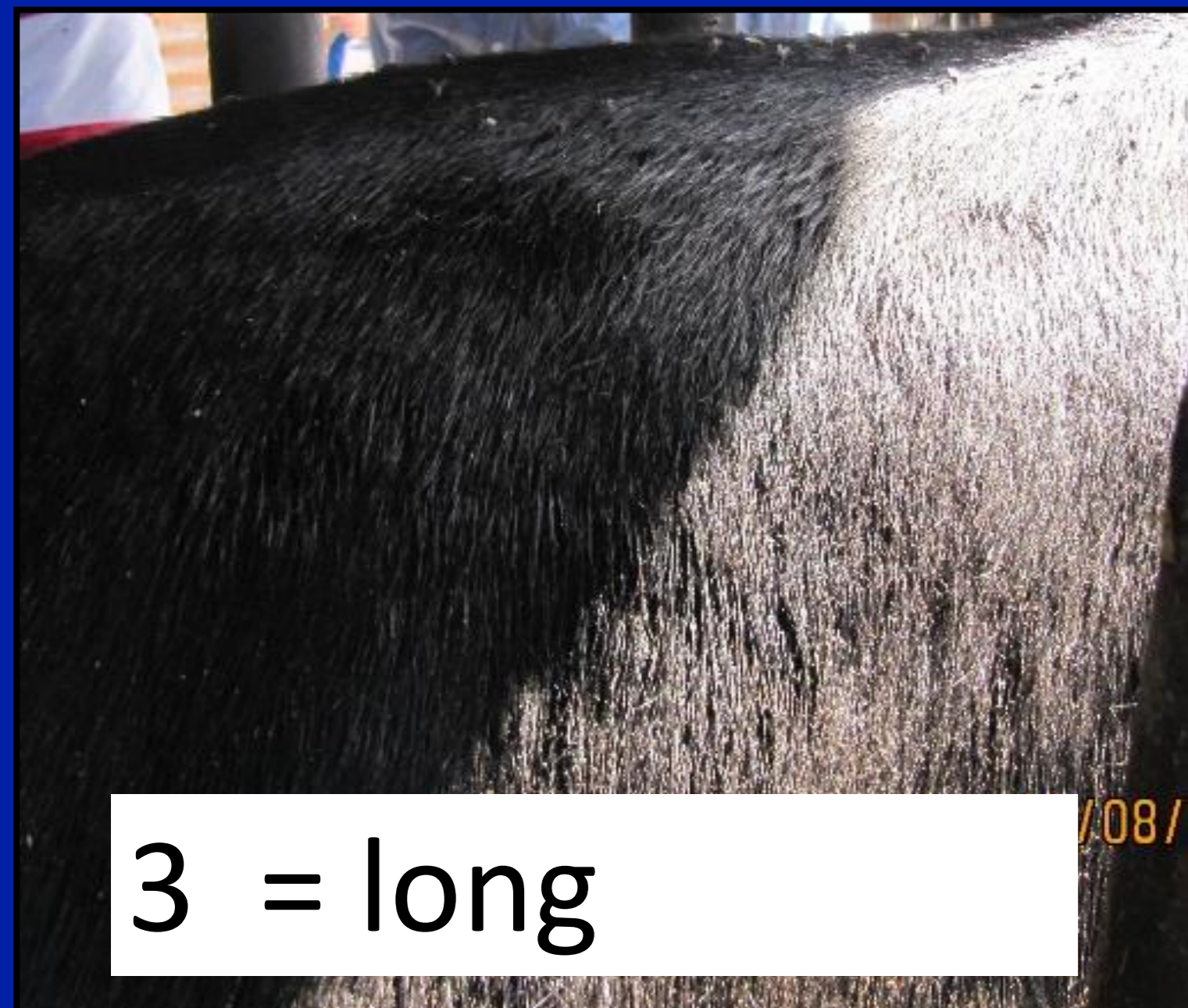
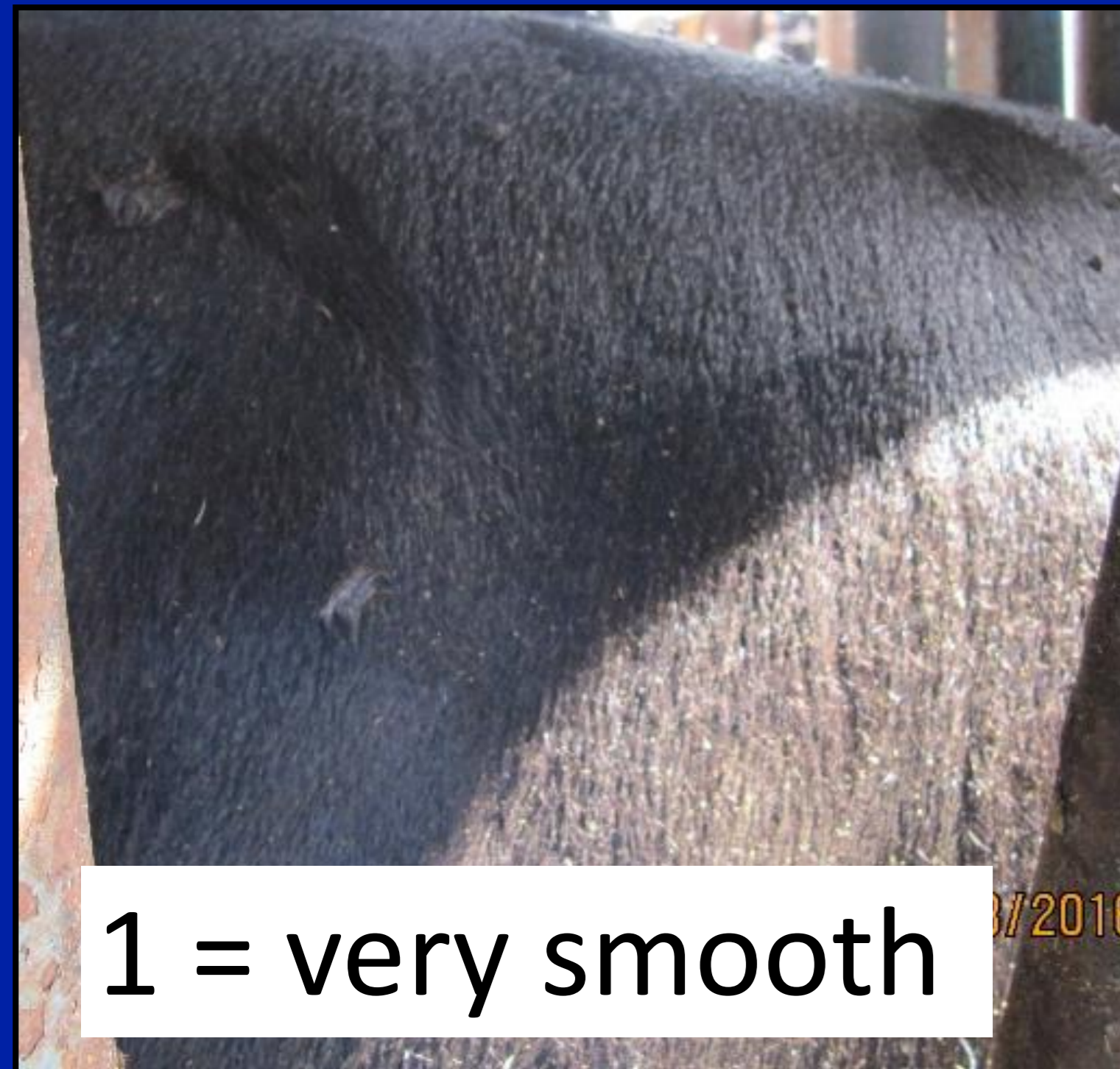
- Vaginal temperature was measured at 5-min intervals for 5 days, including 3 full 24 hour periods
- Ambient environmental conditions monitored using HOBO data loggers were used to calculate a temperature humidity index (THI).
- A THI interval between 74 and 74.5 was defined as “Low THI”, between 84 and 84.5 as a “High THI”
- Vaginal temperature for each cow for these THI categories was calculated as the average vaginal temperature of all the 5-min measurements when the cow was exposed to that respective THI.



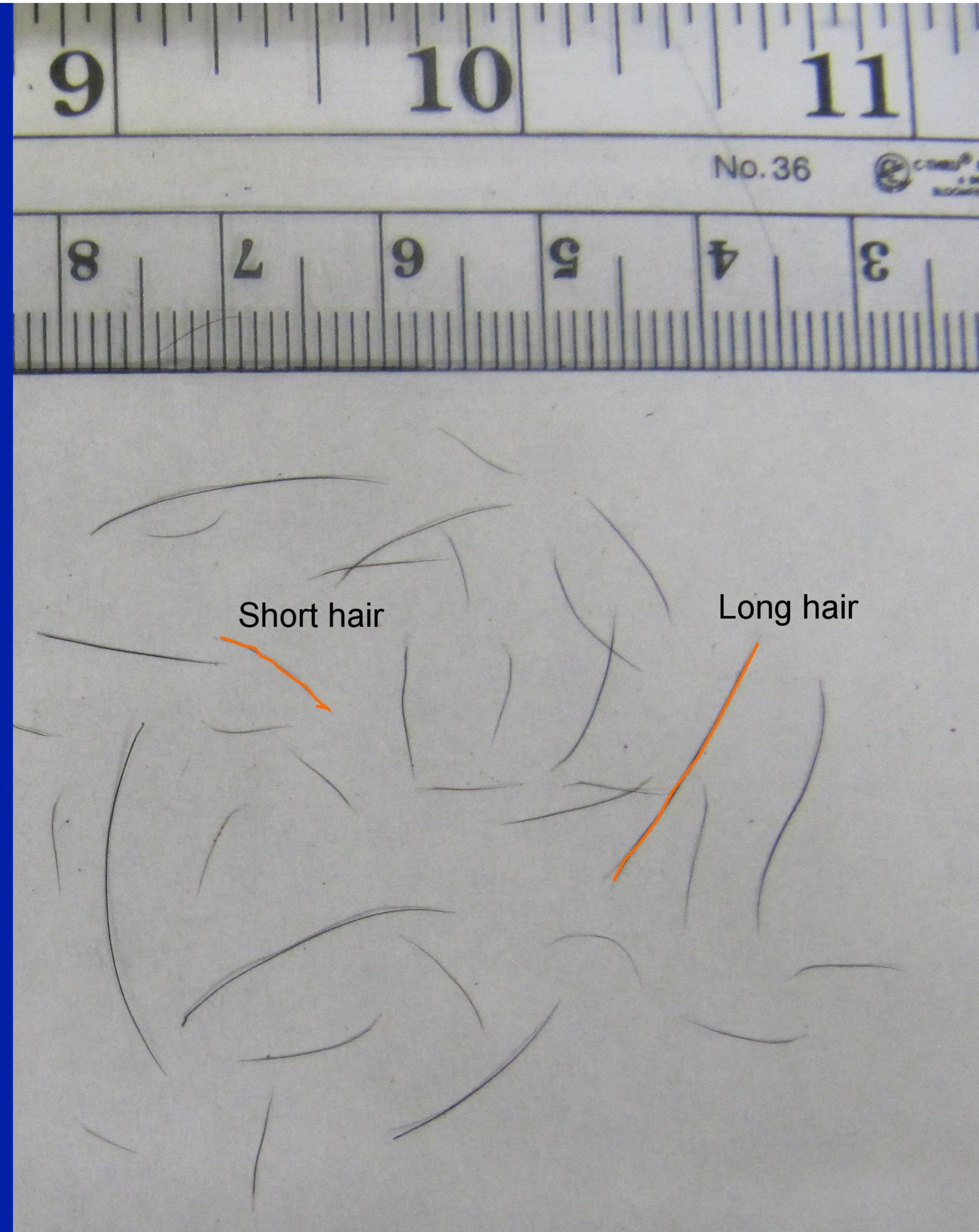
# Materials and Methods



The coat score was scored as:

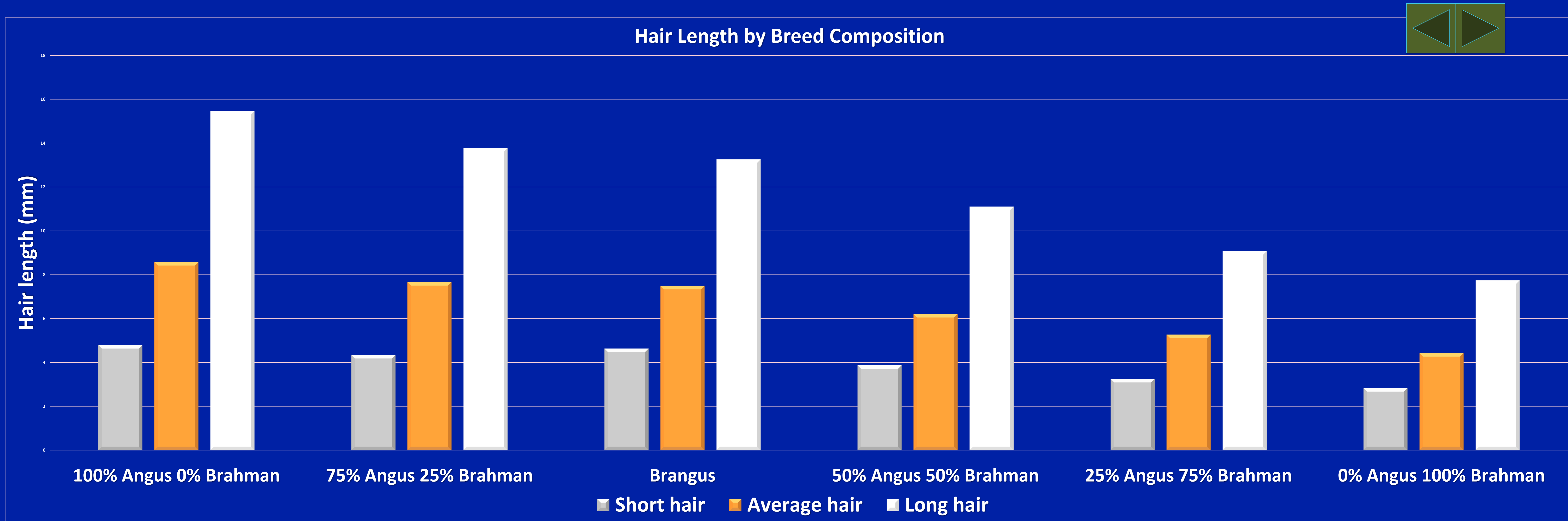


Hair samples were measured for length and diameter using ImageJ software



- 10 hairs were measured for each individual
- 5 long and 5 short hairs were selected for measurements
- Hairs with extremely short or long lengths were excluded from measurement
- The hair lengths were then averaged for analysis

# Results



- Hair length (long, short and overall) was different among the breed groups with the 100% Brahman group having the shortest hair.
- During low THI breed composition, coat score, average hair length, short hair length and long hair length were found to have significant effects ( $P < 0.05$ ) on vaginal temperature.
- During high THI only long hair length ( $P = 0.0518$ ), short hair length ( $P = 0.0560$ ) and average hair length ( $P = 0.0587$ ) were found to have significant effects on vaginal temperature.
- Hair diameter was not found to have an effect on vaginal temperature at either THI status.

# Conclusions

- Hair length across all three measurement tends to decrease as Brahman percentage increases.
- While both breed composition and hair characteristics influence vaginal temperature under hot, humid conditions, breed composition also influences hair characteristics.
- Measurements of hair length may be more informative than traditional coat score

This research was made possible by:

