

**EVALUATION OF POSTPARTUM REPRODUCTIVE PERFORMANCE IN  
BRAHMAN FEMALES WITH DIVERGENT RESIDUAL FEED INTAKE**

A Thesis

by

ANNA KATHRYN POOVEY

Submitted to the Office of Graduate Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2010

Major Subject: Physiology of Reproduction

Evaluation of Postpartum Reproductive Performance in Brahman Females with  
Divergent Residual Feed Intake

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Approved by:

Co-Chairs of Committee,	Ronald D. Randel
	Thomas H. Welsh, Jr.
Committee Member,	Thomas David A. Forbes
Head of Department,	Gary R. Acuff

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**ABSTRACT**

Evaluation of Postpartum Reproductive Performance in Brahman Females with  
Divergent Residual Feed Intake. (August 2010)

Anna Kathryn Poovey, B.S., Oklahoma State University

Co-Chairs of Advisory Committee: Dr. Ronald D. Randel  
Dr. Thomas H. Welsh

These studies were designed to evaluate the relationships that exist between residual feed intake, parity, rate of return to estrous cyclicity and nonesterified fatty acid (NEFA) concentrations, as well as changes in both body weight (BW) and body condition score (BCS) during the prepartum and postpartum time periods in Brahman females. Residual feed intake classification was evaluated for all females during the course of 70-d trials conducted prior to these experiments. Heifers (n = 30) and cows (n = 63) were evaluated for BW and BCS, as well as by collection of weekly blood samples beginning five weeks prior to calving. Blood serum samples were utilized to assay for NEFA concentrations by enzymatic colorimetry both pre- and postpartum. Multiparous females (n = 44) were sampled weekly for five weeks following parturition. Beginning 28d postpartum, weekly blood samples were collected and assayed for progesterone concentrations by radioimmunoassay to determine return to estrous cyclicity. Following calving, females were exposed to epididymectomized bulls fitted with chin-ball markers

to aid in estrus detection. After detection, estrus females were evaluated for presence of a corpus luteum by trans-rectal ultrasonography.

Prepartum, it was found that inefficient females had a greater BCS than efficient females ( $P < 0.05$ ), significant BW changes occurred during the sampling period ( $P < 0.05$ ) and moderate to low correlations existed between BW and BCS. Additionally, it was found that the interaction between RFI x parity had a significant affect upon NEFA concentrations, BW and BCS ( $P < 0.05$ ). During the postpartum period it was found that efficient females were lower in both BW and BCS ( $P < 0.05$ ), no change occurred over time in NEFA concentrations ( $P > 0.1$ ) and a greater pregnancy rate was achieved in efficient females, as well as in females that returned to estrous cyclicity rapidly ( $< 90d$ ) following calving.

## **DEDICATION**

This thesis is dedicated to Pedro and Howie, my two best friends.

## ACKNOWLEDGEMENTS

First, I would like to thank the members of my committee for their help, support and patience for the past two years. Dr. Forbes for demonstrating the proper fecal collecting technique, Dr. Welsh for his silent pat on the arm that said it all when words would not suffice, and Dr. Randal for his endless supply of birds – not fowl.

Thank you to Don Neuendorff for being like my second father, my friend, and forever a 22-year-old child. I'll always be grateful that he introduced me to the volleyball crew, hog hunting and pellet guns. Thanks to Andrea Loyd for being my sounding board and mentor. Without her, many of my endeavors would have been difficult, if not impossible. I'll never be able to fully thank Lisa Boogs Caldwell-Mapel (and her husband) for the nights on their porch, Bryan Agado for his South Texas stories, or Nicole Burdick for her crash courses in statistics.

Thank you to my partner in crime, my dad. I don't think we'll ever have a time when we actually have to finish a thought without the other already answering the unasked question. Thanks to my mother as well. If I turn out to be half the mother she is, I'll have been a great success. The habits she instilled in me are priceless. I never realized I had a perfect childhood until I left home.

To the girls that make me complete, my sisters; I can't ever fully thank you. Like my brother-in-law Mitch says, we may fight like crazy, but try to pick on one of us and we'll circle the wagons and defend to the death. We are rough, tough, and unique; we are the Poovey girls.

Finally, to my best friend who is soon to be my husband, thank you for the miles of driving, the phone calls, and most of all just listening to me the past two years. I love the fact that we decided to take the plunge and I'm sorry we didn't think of it sooner. I am very excited to start our new life together and someday soon to be the best wife and mother I possibly can.



**NOMENCLATURE**

BCS	Body Condition Score
BW	Body Weight
Kg	Kilogram
mEq/L	Milliequivalent per Liter
mL	Milliliter
NEFA	Nonesterified Fatty Acid

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