

Final Technical Report
FCEB Project #3

Final Technical Report - UF Brahman Project
(Project # P0324553)

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1. Main objective

The UF Brahman Project aims to improve marbling, tenderness, and age at puberty of Brahman cattle to enhance their contribution to the commercial beef industry in tropical environments. Our **primary goal** was to provide consistency in the annual data collection of the UF Brahman Project, thereby providing a robust foundation for its tripartite mission in Research, Teaching, and Extension.

2. Situation and specific objective

Florida's subtropical climate makes it an ideal environment for the Brahman breed, which thrives due to its exceptional adaptability. The crossbreeding of Brahman with *Bos taurus* cattle yields remarkable hybrid vigor, further solidifying their suitability for Florida and the Southeast. The UF Brahman Project aims to enhance the meat quality and fertility traits of Brahman cattle, directly benefiting the commercial beef industry. The specific objective of the present proposal was to support the genotype, feedlot, and carcass data collection from UF Brahman herd, providing a valuable resource for current and future Cattle Enhancement Board projects seeking to investigate the Brahman breed and Florida producers interested in the topic. By standardizing annual data collection, this project lays the groundwork for future research and industry advancements.

3. Approach

The UF Brahman Project's basic annual collection encompasses three key components: reproduction records, feedlot performance and carcass and meat quality traits. Briefly, the breeding program is strategically designed for cows deliver the first calves in mid-February, as a result of embryo transfer, artificial insemination, and natural service. This synchronized approach enables a uniform calf crop and a streamlined herd management.

Brahman calves are pre-selected for development at weaning, based on growth performance, overall appearance and genetic potential. After a short preconditioning period (~40 days), few young bulls are enrolled in a feed efficiency trial for individual assessment of feed intake. The feed efficiency trial consists of 14-days adaptation period and 56-days of testing period conducted at the UF Feed Efficiency Facilities in Marianna. Carcass ultrasound is performed twice on bulls. First, at the beginning of the feed efficiency trial and later,

approximately at 14 months old, concurrently with the heifers. Following the development period, a selected group of heifers are kept as replacement and only the best bulls are kept for breeding, all others are castrated, finished, and harvested for carcass and meat quality evaluation.



Figure 1. Brahman young bulls during feed efficiency trial at the Feed Efficiency Facilities of the UF North Research and Education Center in Marianna, Florida.

4. Final report

A total of 96 female and 73 male calves born between February and May 2023 were genotyped using the GeneSeek Genome Profiler F-250 (GeneSeek, Inc., Lincoln, NE, USA). Forty-eight selected Brahman young bulls were transported after weaning to the UF North Research and Education Center in Marianna, FL, where they were fed and housed for 35 days before measurements of individual feed intake and growth rates began. There was a delay on starting the feed efficiency trail due to space availability at the barn.

On day 56 of feed efficiency trail, ultrasound examination was performed on the bulls to determine LM area, fat thickness at the 12th rib, and intramuscular fat percent. A second carcass ultrasound evaluation on 48 Brahman bulls was performed along with 80 Brahman heifers. Carcass data collection and evaluation of carcass loss in 30 steers was performed, and so far meat quality and sensory analysis were conducted in steak samples from 23 steers.

For sensory analysis, cooked steaks were sliced into approximately 2.54 cm x 1.27 cm x 1.27 cm samples and provided to each panelist. The sensory panel consisted of eight members trained for tenderness and connective tissue attributes. Sensory sessions were conducted once or twice per day, and 12 samples were evaluated during each session. Samples were evaluated using a standard ballot and duplicated samples were provided to each panelist. Sensory panel measurements analyzed by the sensory panelists included:

juiciness score (1 = extremely dry to 8 = extremely juicy), beef flavor score (1 = extremely bland to 8 = extremely intense), tenderness score (1 = extremely tough to 8=extremely tender), connective tissue score (1 = abundant amount to 8 = none detected), and off-flavor score (1 = extreme off-flavor to 6 = none detected). For each steak, the average score from all the panelists was analyzed. The data collected under this project are summarized in Table 1.

Table 1. Summary table of collected data.

Trait	Category	N	Min	Max	Mean
Body weight-d56 (lb)	Bulls	48	648	974	794
Ribeye area_ultrasound-d56	Bulls	48	8.53	12.66	11.00
Rib fat_ultrasound-d56	Bulls	48	0.10	0.28	0.17
Intramuscular fat_ultrasound-d56	Bulls	48	1.57	4.05	3.14
Rump fat_ultrasound-d56	Bulls	48	0.16	0.46	0.28
Body weight (lb)	Heifers	80	606	894	743
Ribeye area_ultrasound	Heifers	80	8.56	10.90	9.69
Rib fat_ultrasound	Heifers	80	0.14	0.35	0.23
Intramuscular fat_ultrasound	Heifers	80	1.67	3.68	3.06
Rump fat_ultrasound	Heifers	80	0.28	0.46	0.38
Body weight (lb)	Bulls	48	770	1140	956
Ribeye area_ultrasound	Bulls	48	8.53	14.00	11.73
Intramuscular fat_ultrasound	Bulls	48	1.33	4.53	3.21
Hip height (in)	Bulls	48	48.50	55.00	51.54
Average daily gain (lb/d)	Bulls	48	1.89	4.57	2.98
Dry matter intake (lb/d)	Bulls	48	14.17	31.58	22.19
Residual feed intake	Bulls	48	-9.10	10.37	0
Hot carcass weight (lb)	Steers	23	997	1541	1223
Juiciness	Steers	23	4.18	6.45	4.93
Beef flavor	Steers	23	4.67	5.89	5.31
Tenderness	Steers	23	4.09	6.73	5.00
Connective tissue	Steers	23	4.55	6.91	5.86
Off-flavor	Steers	23	5.30	6.00	5.75

d56: day 56 of feed efficiency trial

5. Conclusion:

The project was concluded, and data is available for research and public use by anyone interested in the topic.

PLEASE REMIT TO:

UNIVERSITY OF FLORIDA BOARD OF TRUSTEES
 Contracts & Grants
 PO Box 931297
 Atlanta, GA 31193-1297

Invoice Date: 08/15/2024
 Invoice Period: 05/01/2024 - 07/31/2024
 Principal Investigator: Marcondes De Rezende, Fernanda
 Award Begin Date: 10/30/2023
 Award End Date: 07/31/2024
 UF FEIN: 59-6002052

SPONSOR:

FL CATTLE ENHANCEMENT BOARD
 P.O. Box 421929
 Kissimmee FL 34742-1929
 United States

Sponsor Award ID: 3
 Award Title: UF Brahman Project
 Award Amount: \$45,007.00

Invoice #	I000130493
UF Award #	AWD15785
Primary Project #	P0324553
Primary Department:	60090000
Current Invoice Amount:	\$22,757.14

Description	Current	Cumulative
Personnel - Salary	\$356.40	\$954.89
Personnel - Fringe Benefits	\$104.38	\$279.70
Contractual Services	\$6,500.00	\$6,500.00
Animal	\$13,358.10	\$29,854.70
Direct Cost	\$20,318.88	\$37,589.29
Facilities and Administrative Costs	\$2,438.26	\$4,510.69
Total	\$22,757.14	\$42,099.98

For billing questions, please call 352.392.1235
 Torres, Kannika S kannika@ufl.edu
 Please reference the UF Award Number and Invoice Number in all correspondence

By signing this report, I certify to the best of my knowledge and belief that the report is true, complete, and accurate, and the expenditures, disbursements and cash receipts are for the purposes and objectives set forth in the terms and conditions of the federal award. I am aware that any false, fictitious, or fraudulent information, or the omission of any material fact, may subject me to criminal, civil, or administrative penalties for fraud, false statements, false claims or otherwise. (U.S Code Title 18, Section 1001 and Title 31, Sections 3729-3730 and 3801-3812).

Kannika Torres

 Certifying Official

Payment History	
Cumulative Invoices:	\$42,099.98
Payments Received:	\$19,342.84
Outstanding Balance:	\$22,757.14
Note: Outstanding balance includes current invoice amount	

FOR UF USE ONLY			Additional Projects: N	
Project ID	Deptid	Department Name	Current	Cumulative
P0324553	60090000	AG-ANIMAL SCIENCES	\$22,757.14	\$42,099.98