

Brahman Project Update 2012 - 2014

M. A. Elzo¹, D. D. Johnson¹, D. O. Rae², K. C. Jeong¹, D. G. Riley³, R. Mateescu¹, T. Scheffler¹, J. Scheffler¹, C. A. Martinez¹, J. G. Wasdin¹, J. D. Driver¹, and G. E. Dahl¹

¹Department of Animal Sciences, UF/IFAS, Gainesville, FL

²Dept. Large Animal Clinical Sciences, College Vet. Medicine, UF, Gainesville, FL

³Department of Animal Science, Texas A&M, College Station, TX

Objectives: Local and Regional

Population Structure and Animals

Data Collection and Tissue Sampling

Means for 2013-2014 Growth Traits

Means for 2012-2013 Ultrasound, Carcass, and Meat Palatability Traits

Expected Outcomes

Local Objectives

Develop a Brahman population with animals from multiple herds to conduct polygenic and genomic evaluation and selection for reproduction, growth, feed efficiency, ultrasound, carcass and meat palatability traits

Construct a database with pedigree, genomic, and phenotypic data from all participating herds

Conduct genetic and genomic evaluation of animals for reproduction, growth, feed efficiency, ultrasound, and carcass and meat palatability traits using pedigree, genomic, and phenotypic information

Identify and disseminate genetics from animals with the best predicted genetic and genomic values for reproduction, growth, feed efficiency, and carcass and meat palatability traits

Draft Regional Objectives Project S1064

Genetic and economic characterization of Brahman and Brahman x Angus cows for reproduction and production traits for the first four parities

Cow reproductive ability as success/failure after the first insemination and at calving

Preweaning calf nursing ability and its effect on survival and weaning weights

Cow-calf productivity in terms of calf preweaning gains and calf postweaning ultrasound, carcass, and meat quality traits

Economic analysis of reproduction, production, carcass, and meat palatability traits per parity and for all four parities.

HERD	EXPNUM	BULLNUM	REG NUM	ASSOC	BULLNAME	AI NUM FRM	SEM	MG	ANFR	BRFR	2013	2014
MAB	251	3999251			MOUNTAIN MEADOW ROCKY	048AN1115	103	1	32	0	1	0
MAB	260	3999260	16221441	AAA	FINTRY OF GRAHAM 70138	108-9013	48	1	32	0	1	0
MAB	270	3999270	15270788	AAA	TATES BULLSEYE TARGET 5T2	48AN1173	60	1	32	0	1	1
MAB	271	1109074			TATES DISCOUNT 074	110-9074	61	1	32	0	1	1
MAB	287	3999287	12194989	AAA	Plowman 1627 of Millbrae SAR	AN1519_AN259	78	1	32	0	0	1
MAB	288	3999288	16107741	AAA	SAV Birthstone 8258	90AN7469	60	1	32	0	0	1
MAB	225	3060003			3060003	UF306-0003	33	2	23	9	0	1
MAB	261	3080222			3080222	308-0222	54	2	21	11	1	0
MAB	262	3999262			MC TRAVELER 415-00K8	568N246	29	2	24	8	1	0
MAB	272	3070006			3070006	307-0006	53	2	18	14	1	1
MAB	289	3090067			3090067	309-0067	60	2	22	10	0	1
MAB	263	3070037			3070037	307-0037	47	3	18	14	1	1
MAB	264	3080077			3080077	308-0077	48	3	16	16	1	0
MAB	273	3090079			3090079	309-0079	43	3	15	17	1	1
MAB	290	3110021			3110021	311-0021	70	3	16	16	0	1
MAB	265	3090156			3090156	309-0156	36	4	10	22	1	0
MAB	274	3999274			MC EVOLUTION 129M2	568N344	55	4	8	24	1	1
MAB	275	3070078			307-0078	307-0078	70	4	8	24	1	1
MAB	291	3100189			3100189	310-0189	60	4	10	22	0	1
MAB	268	3999268			UMC WATASH 192T7	107-9192	31	6	20	12	1	0
MAB	269	3999269			ECH-NG NOBLE OF BRINKS	153BN4	28	6	20	12	1	0
MAB	279	3999279		IBBA	OBF 23 R13	105-923R	60	6	20	12	1	1
MAB	280	4090010			409-0010		0	6	20	12	1	0
MAB	292	1119033	R10188704	IBBA	SAF 175 UPDATE 314C 33X7	111-9033	110	6	20	12	0	1
MAB	293	3999293		IBBA	MC Real Deal 541R3	BN113	100	6	20	12	0	1
MAB	294	3999294		IBBA	MC Twokayfour 98W5	BN166	50	6	20	12	0	1

HERD	EXP NUM	BULLNUM	REG NUM	ASSOC	BULL NAME	AI NUM FRM	SEM	MG	ANFR	BRFR	2013	2014
MAB	266	3119025		ABBA	FF MR. BAR MANSO 25	311-9025	0	5	0	32	1	0
MAB	267	3069427		ABBA	KCC 247 OF 979-205	153BR128	31	5	0	32	1	0
MAB	276	3999276		ABBA	WHS DUKE OF TITAN 1809	139BR050	40	5	0	32	1	1
MAB	277	3999277		ABBA	MR. SUNLAND 6X 874	154BR509	45	5	0	32	1	1
MAB	278	3999278		ABBA	MR FLYING W 831	154BR501	25	5	0	32	1	1
MAB	286	3109369		ABBA	KCC 369 OF 256-282	310-9369	45	5	0	32	1	1
MAB	295	2120125			2120125	212-0125	60	5	0	32	0	1
BRA	281	3999281		ABBA	BL LI'L BOZO 1/8	1/8	70	5	0	32	1	1
BRA	282	3999282		ABBA	NMSU 6X CLOVERDALE 5129	259BR1003	70	5	0	32	1	1
BRA	283	3999283		ABBA	NMSU DUBO CHERRA 45/1	259BR1010	40	5	0	32	1	1
BRA	284	3999284		ABBA	MR TAES 7145	153BR121	60	5	0	32	1	1
BRA	285	3049147		ABBA	TH BURMA BEN SUVA 147-04		0	5	0	32	1	0
BRA	286	3109369		ABBA	KCC 369 OF 256-282	310-9369	60	5	0	32	1	0
BRA	297	3999297		ABBA	MR. V8 259/7	268BR369	27	5	0	32	0	1
BRA	218	3999218		ABBA	JJ PONCRATA 276	BR170	16	5	0	32	0	1
BRA	230	3999230		ABBA	REP IMPRA MANGUM 370	UF398-9370	13	5	0	32	0	1
BRA	267	3069427		ABBA	KCC 247 OF 979-205	153BR128	9	5	0	32	0	1
BRA	295	2120125			212-0125	212-0125	60	5	0	32	0	1
BRA	296	3999296		ABBA	JCC LOXI MANSO 930/1	2-9930	60	5	0	32	0	1
BRA	300	2120041		ABBA	212-0041		0	5	0	32	0	1



Culling and Mating

Culling

Culling of calves due to health and production
 Culling of dams due to health, reproduction, and production
 (Same as multibreed herd)

Mating

Artificial Insemination (1 or 2) followed by Natural Service
 (Same as multibreed herd)



Number of Calves 2012-2014



Breed Group of Dam	Breed Group of Sire							Total
	Angus	.75A	Brang	.50A	.25A	Brahm	BraBK	
	6	5	7	4	4	7	13	46
Angus	55	11	18	15	13	19	0	131
.75A	34	19	34	22	21	28	0	158
Brangus	16	9	59	10	8	8	0	110
.50A	31	24	28	29	26	31	0	169
.25A	22	16	14	16	14	15	0	97
Brahman	2	6	2	3	5	108	0	126
BrahBK	0	0	0	0	0	0	262	262
Total	160	85	155	95	87	209	262	1053



Data Collection 2012 - 2014

Pedigree Data

Complete pedigree file with information on all animals (calves, sires, and dams)

Reproduction, Growth, and Ultrasound Data

Cow pregnancy status, calving interval, weights, condition scores
Calf weights at birth, pre-weaning, weaning, yearling, post-yearling
Calf ultrasound weight, ribeye area, intramuscular fat, backfat

Carcass and Meat Palatability Data

Slaughter wt, carcass weight, dressing %, ribeye area, marbling, backfat thickness
Shear force, tenderness, connective tissue, juiciness, flavor, off-flavor

Health Data

Cow ELISA scores for paratuberculosis (Johne's Disease)

Microbiological Data

Number of Colonies of E. coli O157 per fecal swab (Shiga Toxin)
Prevalence of E. coli O157 per fecal swab (Shiga Toxin)

Tissue Collection in 2012 - 2014

Sires

Semen (4 straws)

Blood (2012: 1 tube: 10cc; 2013-2014: 3 tubes: 3 cc each)

Dams

Blood (2012: 1 tube: 10cc; Brahman Brooksville)

Blood samples for ELISA test (Multibreed and Brahman herds)

Calves

Blood (2012: 1 tube: 10cc; 2013: 3 tubes: 3 cc each)

Hair (2013-2014: 40 hairs with follicles)

Fecal samples (Microbiological Analysis for E. coli O157)

Blood samples stored at -80 °C at Animal Sciences, UF

Hair samples stored at room temperature (Animal Sciences, UF)

Traits Analyzed

Growth Traits 2012-2014

Birth Weight, Weaning Weight, Weaning Weight 265 days

Ultrasound Traits 2012-2014

Ribeye Area, Fat Over Ribeye, Intramuscular Fat

Carcass Traits 2012-2013

Slaughter Age, Slaughter Weight, Average Daily gain, Hot Carcass Weight, Ribeye Area, Ribeye Area/100lb, Fat Over Ribeye, Marbling, Kidney-Pelvic-Heart Fat

Meat Palatability Traits 2012-2013

Shear Force, Tenderness, Juiciness, Connective Tissue, Flavor, Off-Flavor

Microbiological Traits 2013-2014

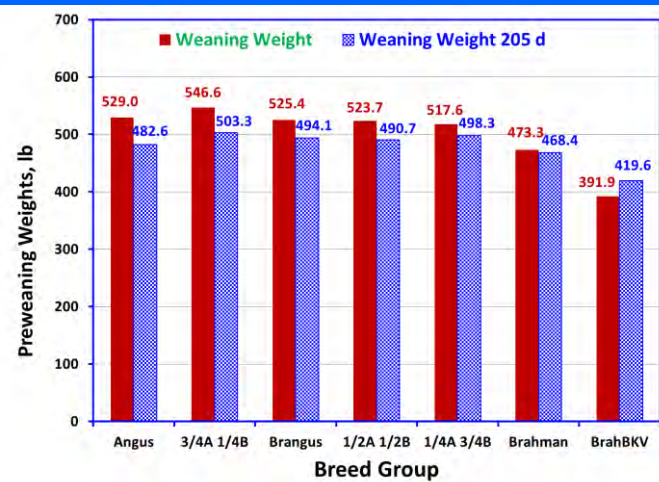
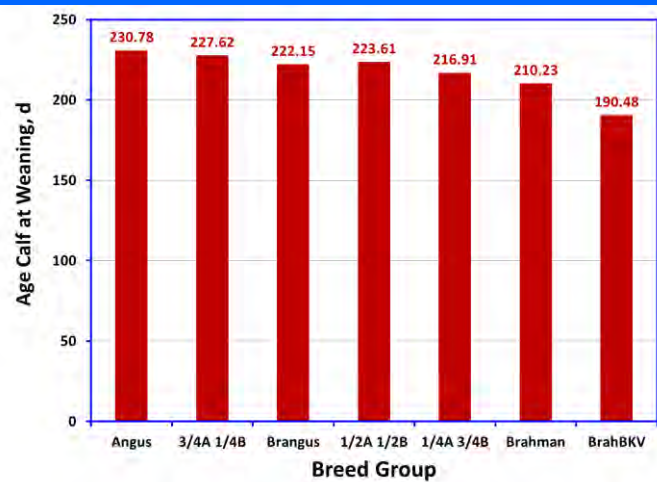
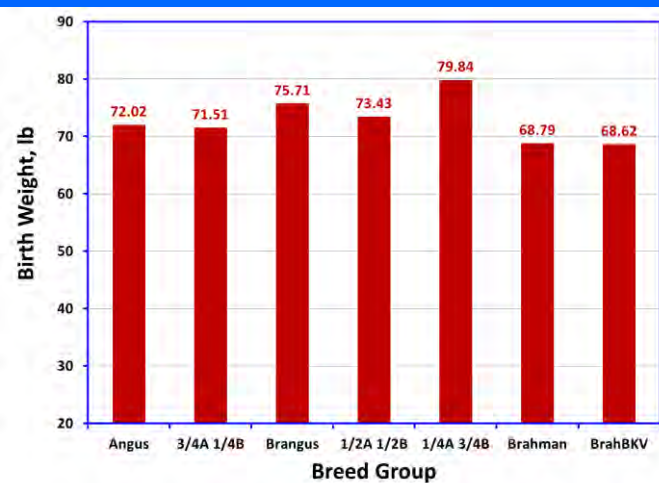
Number of E. coli O157 Colonies Preweaning and Postweaning
Prevalence of E. coli O157 Preweaning and Postweaning

Numbers of Calves per Trait (2012 – 2014)

	Birth Weight	Weaning Weight	Ultrasound Traits	Carcass Traits	Meat Palatability Traits
Angus	83	81	63	27	24
3/4A 1/4B	94	84	59	31	29
Brangus	63	60	48	30	28
1/2A 1/2B	134	126	84	39	35
1/4A 3/4B	76	68	57	20	19
Brahman	82	74	66	34	32
BrahBKV	116	104	114	30	30
All	648	597	491	211	197

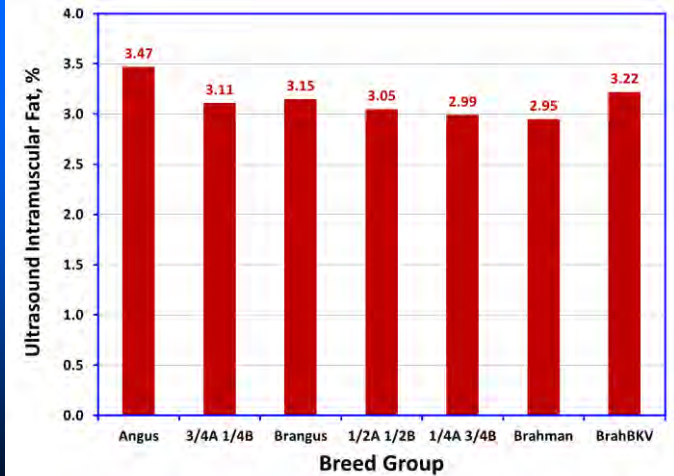
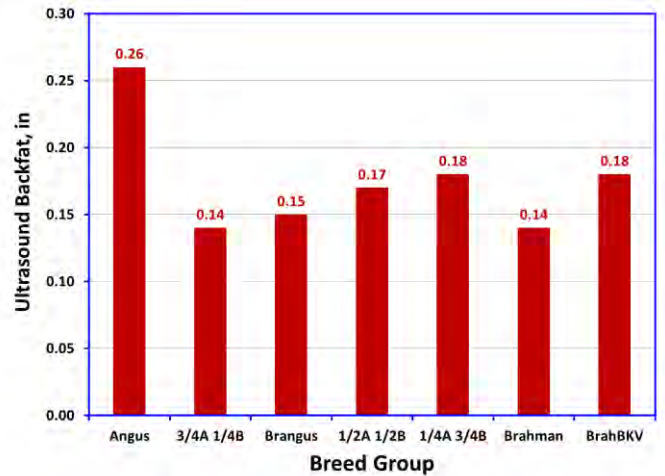
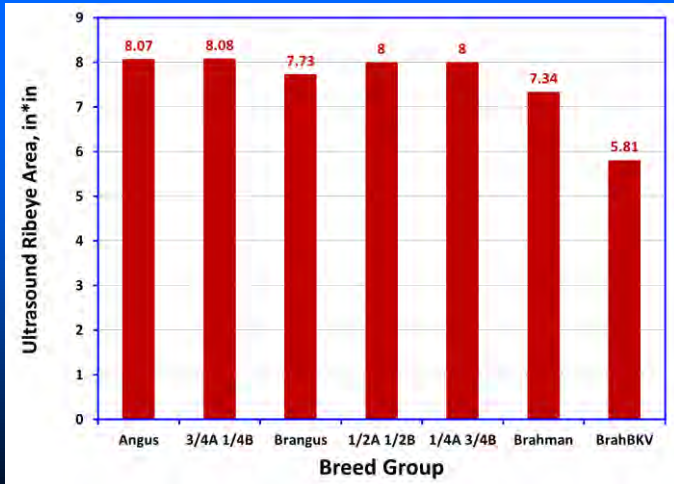
Means for Growth Traits (2012-2014)

Birth Weight
Weaning Weight
Age of Calf at Weaning
Weaning Weight 205 days



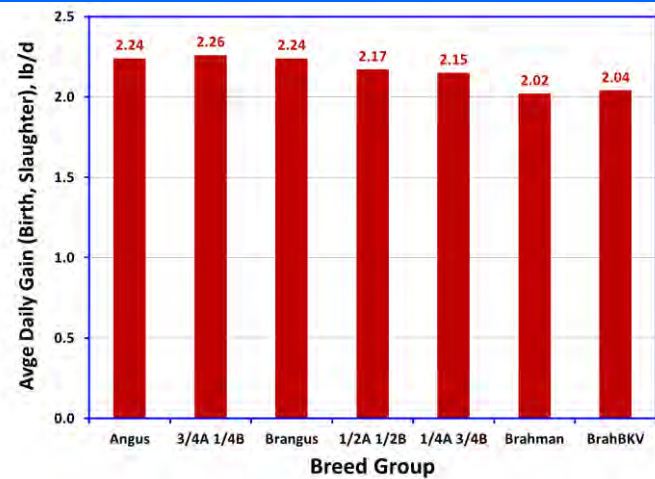
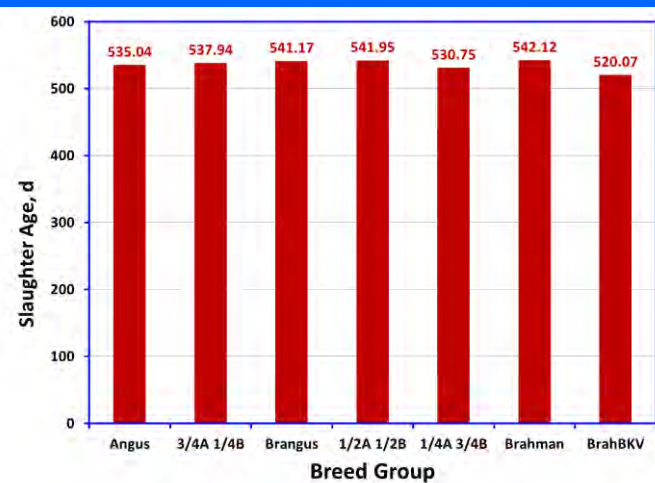
Means for Ultrasound Traits (2012-2014)

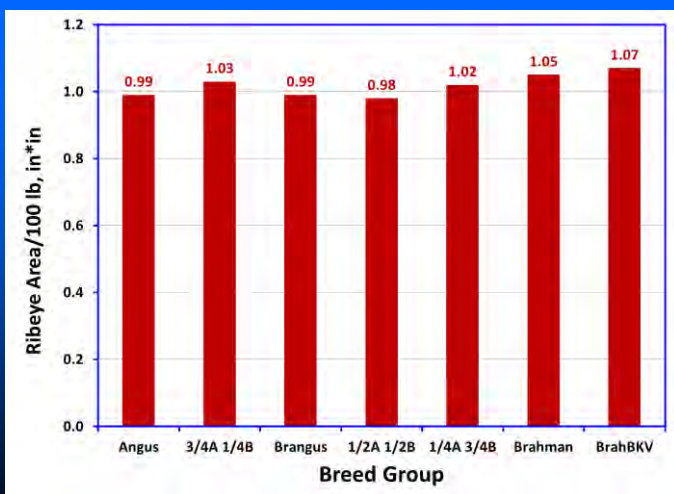
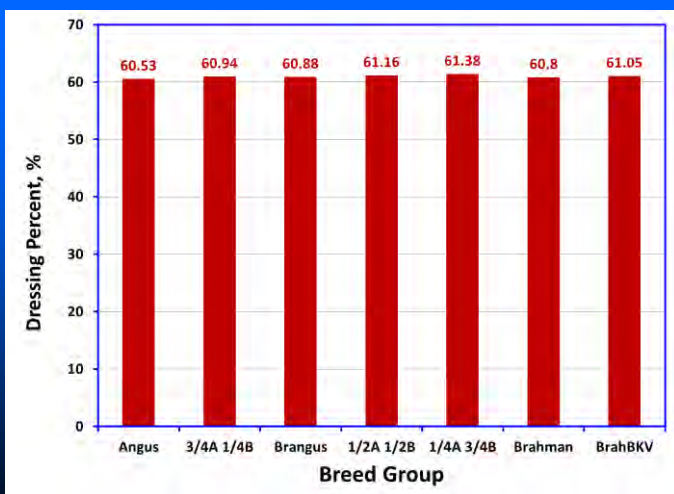
Ribeye Area
Fat Over Ribeye
Intramuscular Fat

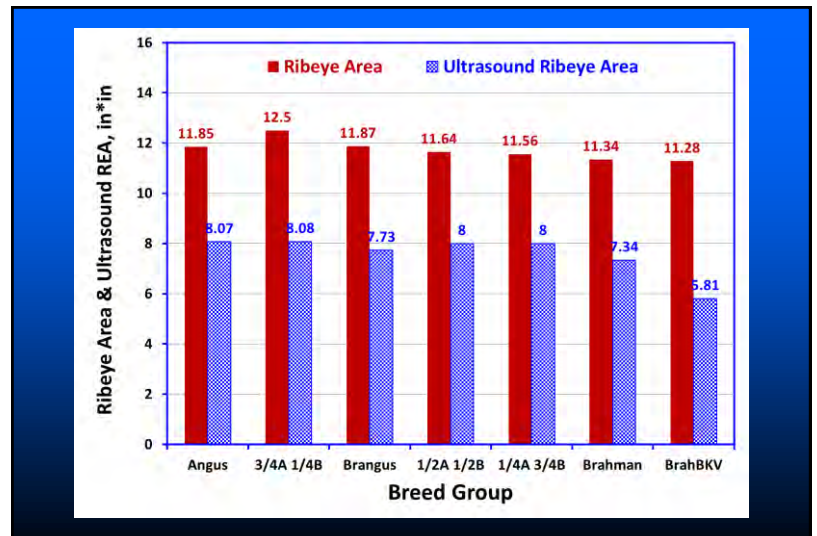
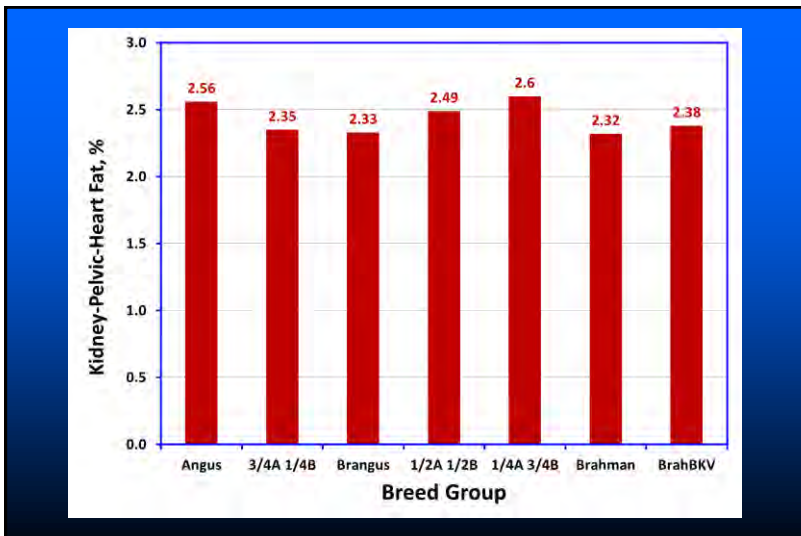
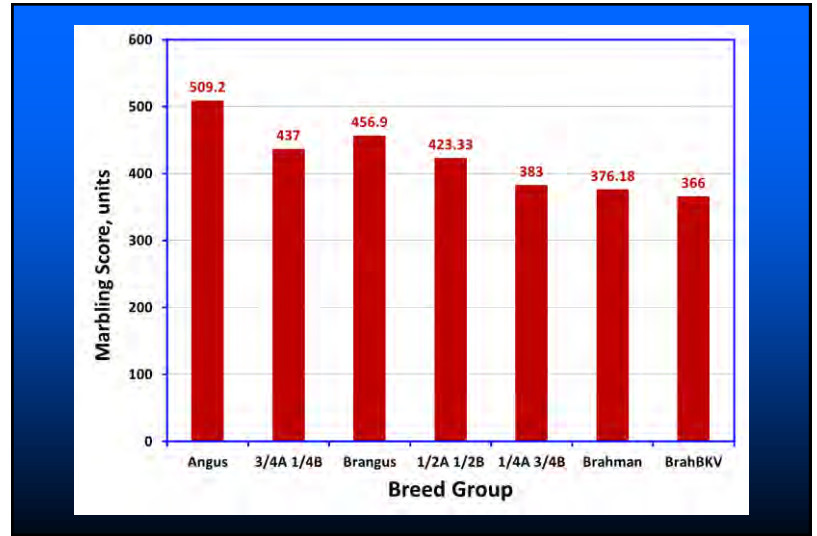
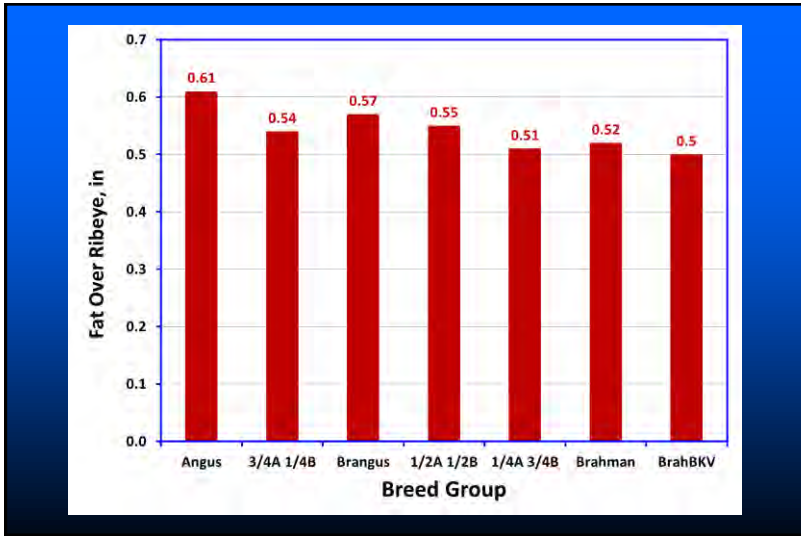


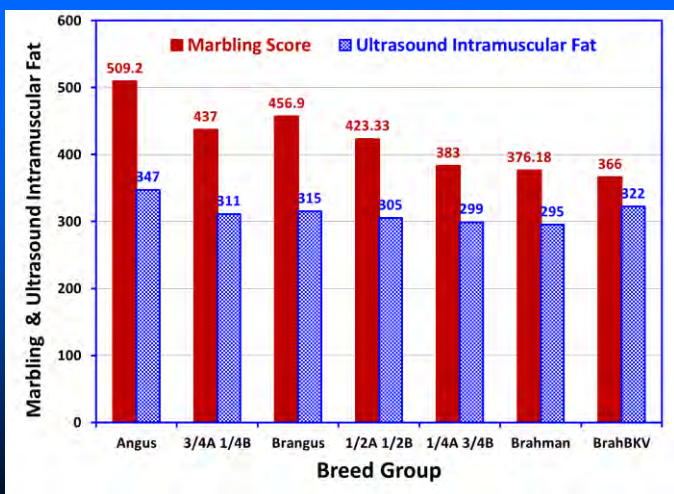
Means for Carcass Traits (2012-2013)

Slaughter Age
Slaughter Weight
Average Daily Gain (Birth to Slaughter)
Hot Carcass Weight
Dressing Percent
Ribeye Area
Ribeye Area/100 lb Liveweight
Fat Over Ribeye
Marbling
Kidney-Pelvic-Heart Fat



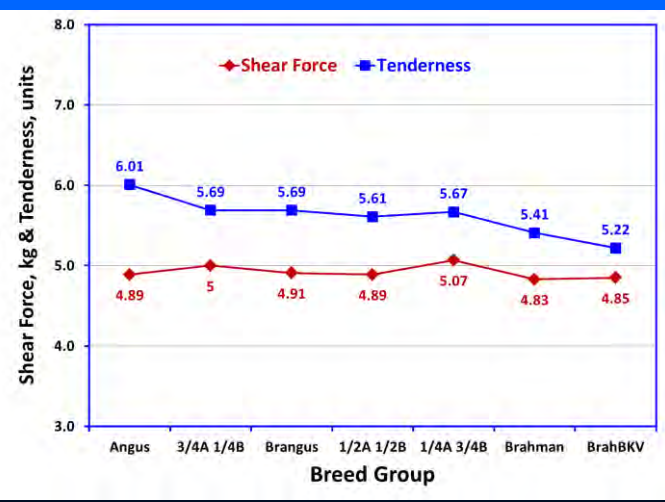
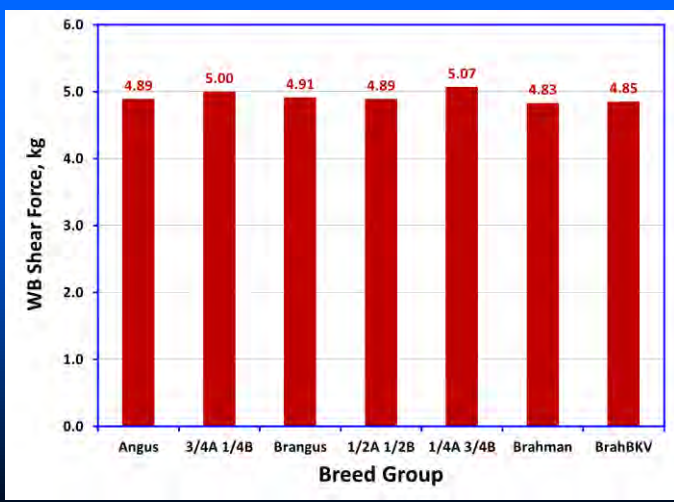


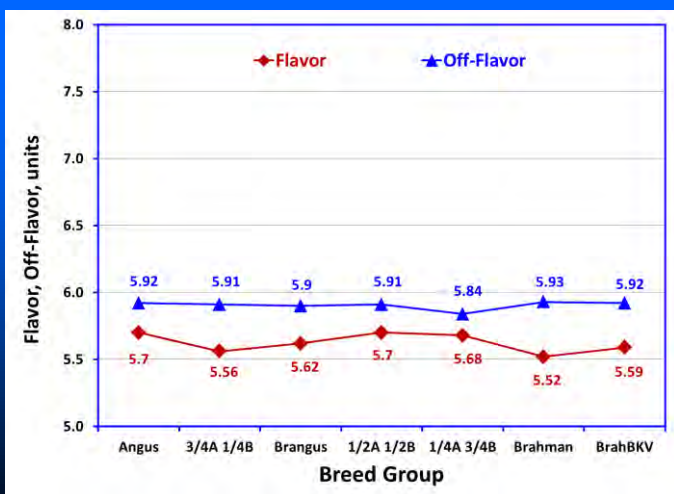
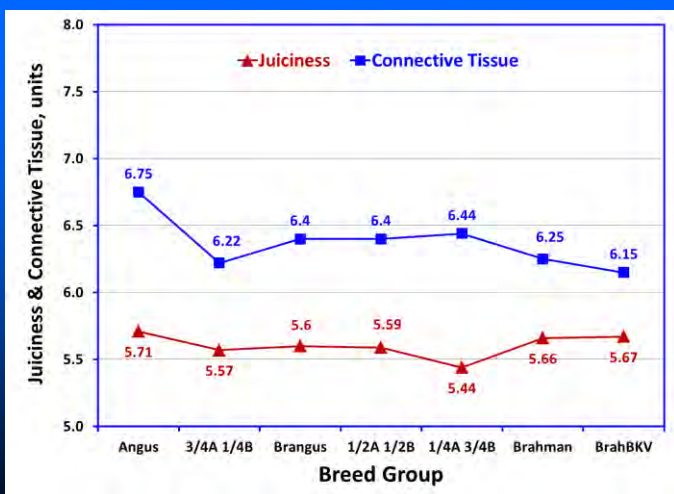




Means for Meat Palatability Traits (2012-2013)

Shear Force
 Tenderness (1 = tough ... 8 = tender)
 Juiciness (1 = dry ... 8 = juicy)
 Connective Tissue (1 = abundant ... 8 = none)
 Flavor (1 = bland ... 8 = intense)
 Off-Flavor (1 = extreme ... 6 = none)





Genotypic Analysis of Tissue Samples

*** Provided that funding is available ***

Genotyping of tissue samples with commercial chips
GeneSeek GGP (20K) and GGP HD (80K)

Imputation of genotypes using available genotypic data [Illumina 3k, 50k, 20k, 80k, 800k] and pedigree information

Combine genotypic information with pedigree and phenotypic data to conduct genomic-polygenic evaluation of all animals in the population

Research Costs

Genotyping

GeneSeek (GGP High Density; Illumina 80K) = \$85 per animal
GeneSeek GGP Low Density; 20K) = \$40 per animal

Ultrasound

\$12 per animal

Carcass and Meat Palatability

\$84 per animal
(Includes sensory, shear, crude fat, carcass, meat cost)

Feed Efficiency

\$140 per animal
(Includes transportation and feed costs at NFREC)

Expected Outcomes

Genetic and genomic evaluation of animals from all participating herds for all traits in common

Ranking of animals by genetic and genomic predicted values within and across herds

Genetic improvement within and across herds by preferential use of males and females with superior EBV as parents of future generations

Genetic and genomic trends within and across herds

Acknowledgements

Barthle Brothers Ranch, FL
Doc Partin Ranch, FL
D Bar Ranch, LA
Double C Bar Ranch, FL
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Heart Bar Ranch IV, FL
Kempfer Cattle Company, FL
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New Mexico State University, NM
Partin & Partin Heart Bar Ranch, TX
Rocking S Ranch, FL
Texas AgriLife Research & Extension Center, Overton, TX
Treasure Hammock Ranch, FL
Tucker Family Cattle, FL

American Brahman Breeders Association
Florida Brahman Association