CARCASS CHARACTERISTICS AND MEAT QUALITY OF BEEF FROM THE ANGUS-BRAHMAN MULTIBRED PROJECT

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Production Efficiency

Research: Breed Composition & Carcass, Meat Palatability

HATCH & TSTAR Projects

Complete Angus-Brahman Multibreed Dataset (1989 to 2009)

1,367 Steers

100% Angus to 100% Brahman

Data - Steers Born 1989 to 2009

Pedigree and Breed Fractions {Calves, Sires, Dams}
Matings: Diallel Design of 213 Sires to 824 Dams

Data: {Date, weight, height, condition score, …}
Files: n= 1367

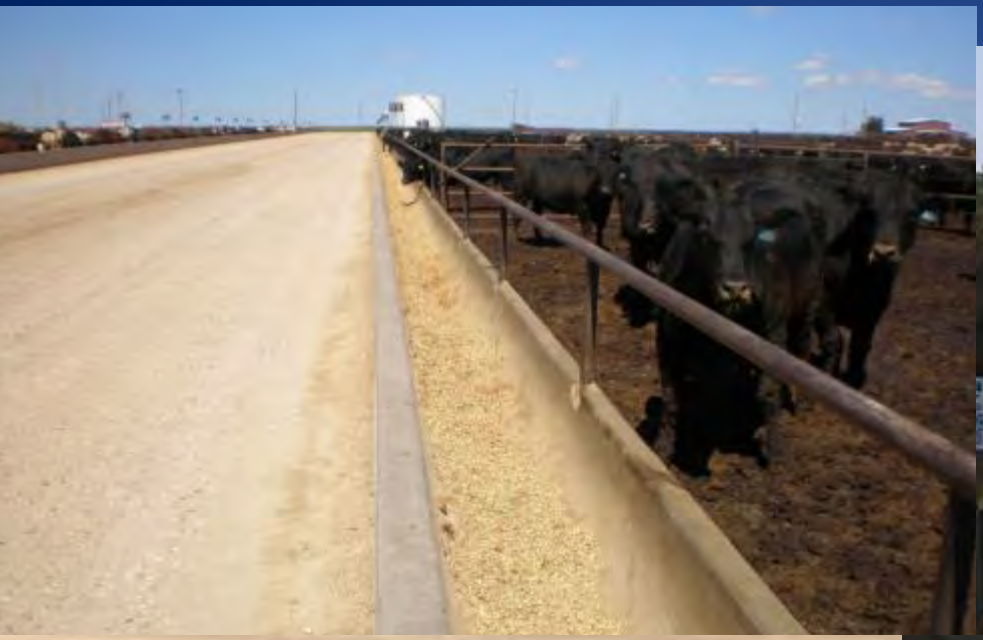
Dataset

				Sire BG			
Dam BG	Angus	3/4 A 1/4 B	Brangus	1/2 A 1/2 B	1/4 A 3/4 B	Brahman	Total
Angus	116	16	34	17	27	32	242
3/4 A 1/4 B	47	23	30	26	29	32	187
Brangus	28	6	134	17	20	21	226
1/2 A 1/2 B	54	50	61	46	49	46	306
1/4 A 3/4 B	29	20	32	21	25	45	172
Brahman	28	15	26	11	10	144	234
Total	302	130	317	138	160	320	1367

Data Recording at FEF

Calves: Bulls, Heifers, Steers
AdjPeriod: 21 d; Trial:70 d
Pens: 24; Calves/pen: 14 - 16

Intake: Feed, Water (Real time)
Growth: Dates, weights, Hip Ht (2 wk)
Temperament: Chute Score, Exit Velocity
Ultrasound: UREA, UIMF, UBF, UTend



EST. 1853
KING RANCH

Kane's
SAM KANE
BEEF PROCESSORS, INC.

FPL food LLC

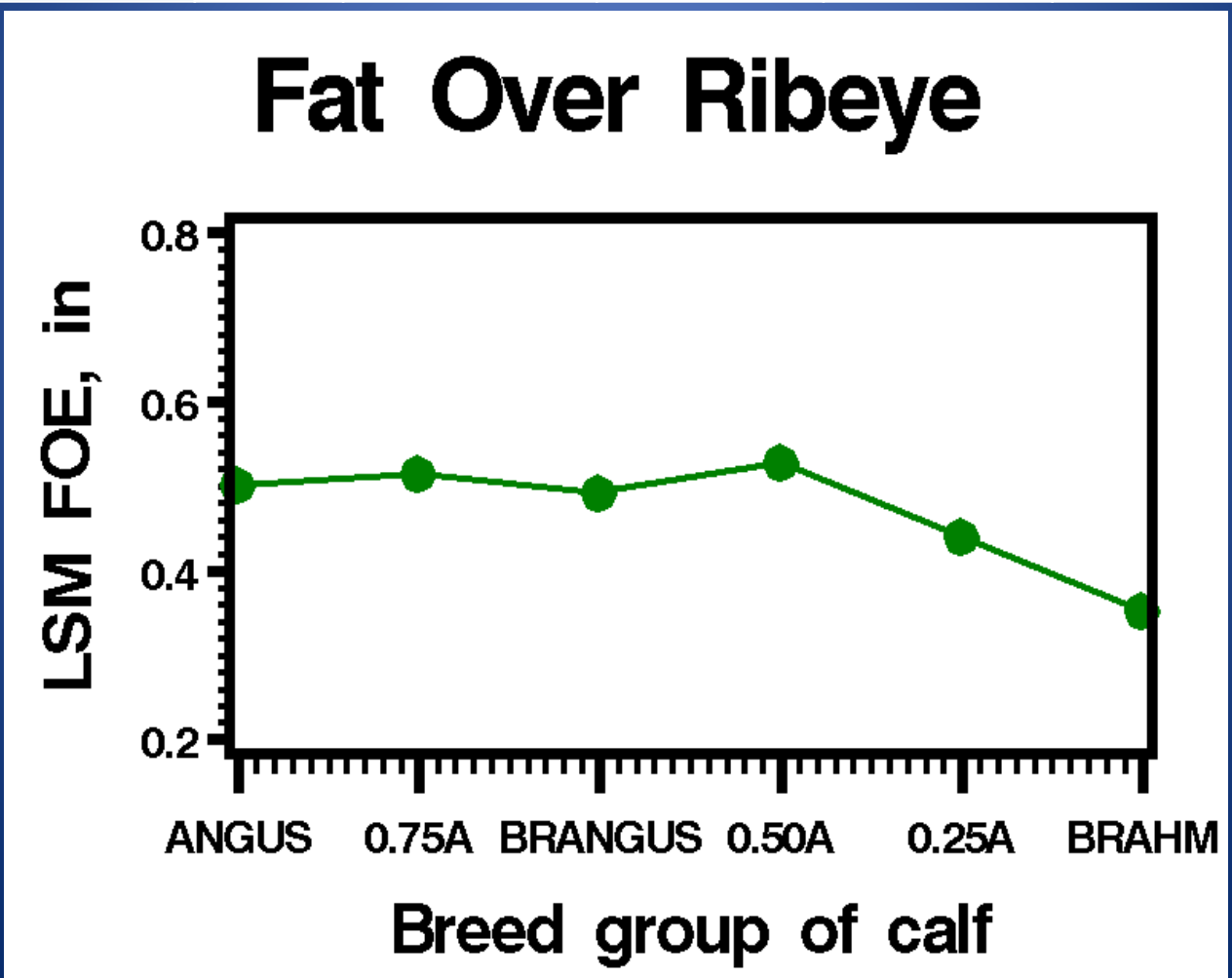
Post-FEF Data Recording

Carcass and Meat Quality Data

Growth: Date, Slaughter weight
Carcass: HCW, BF, REA, KPH, MAR, YG, QG
Meat Quality: Shear Force, Tenderness, Juiciness, Flavor, Cook Loss, Thaw Loss

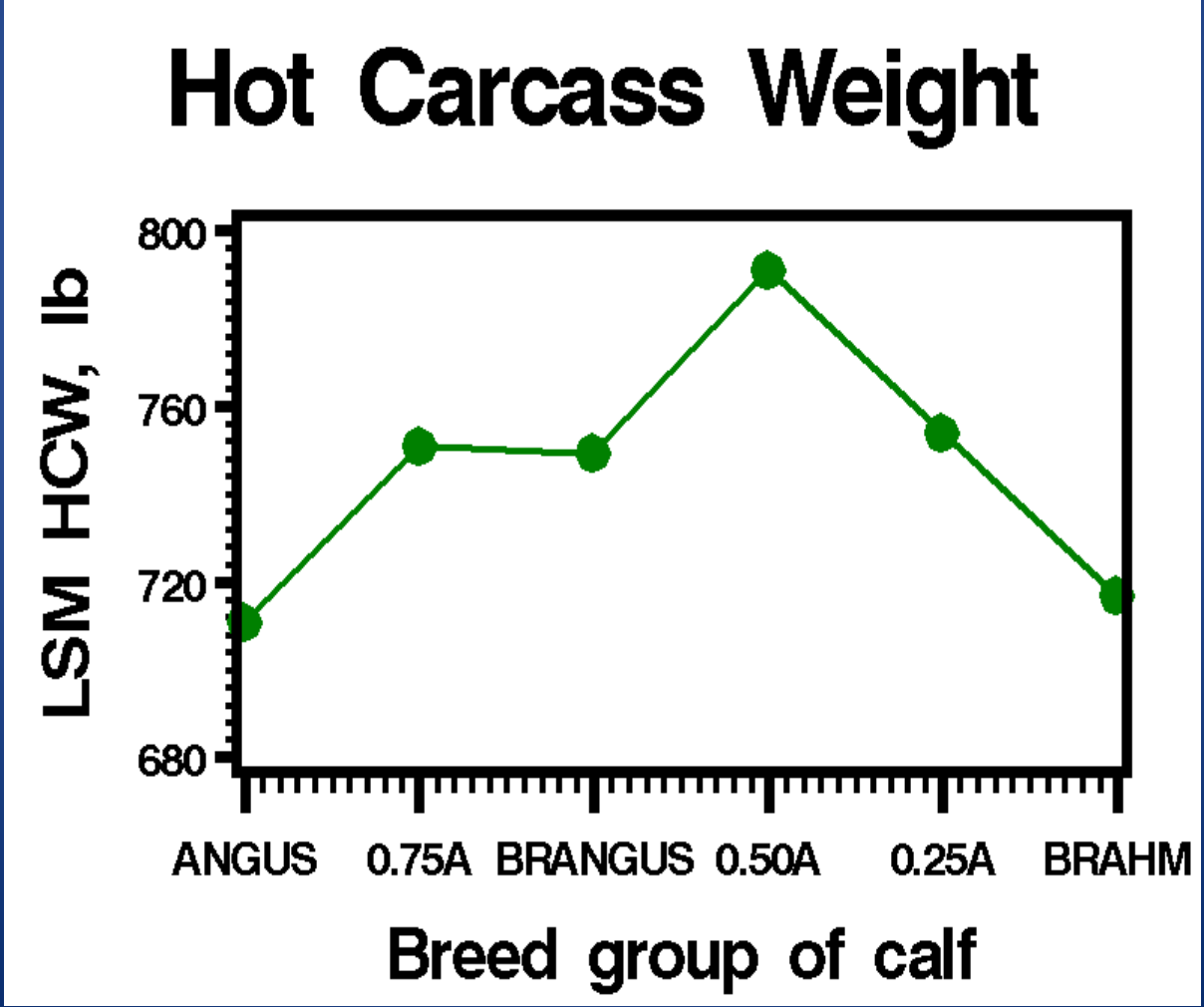
Breed Differences and Heterosis Effects for Fat Over Ribeye

Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
FOE, in	1353	Brah - Ang	-0.15	0.05	<0.0001
		Heterosis	0.10	0.05	<0.0001



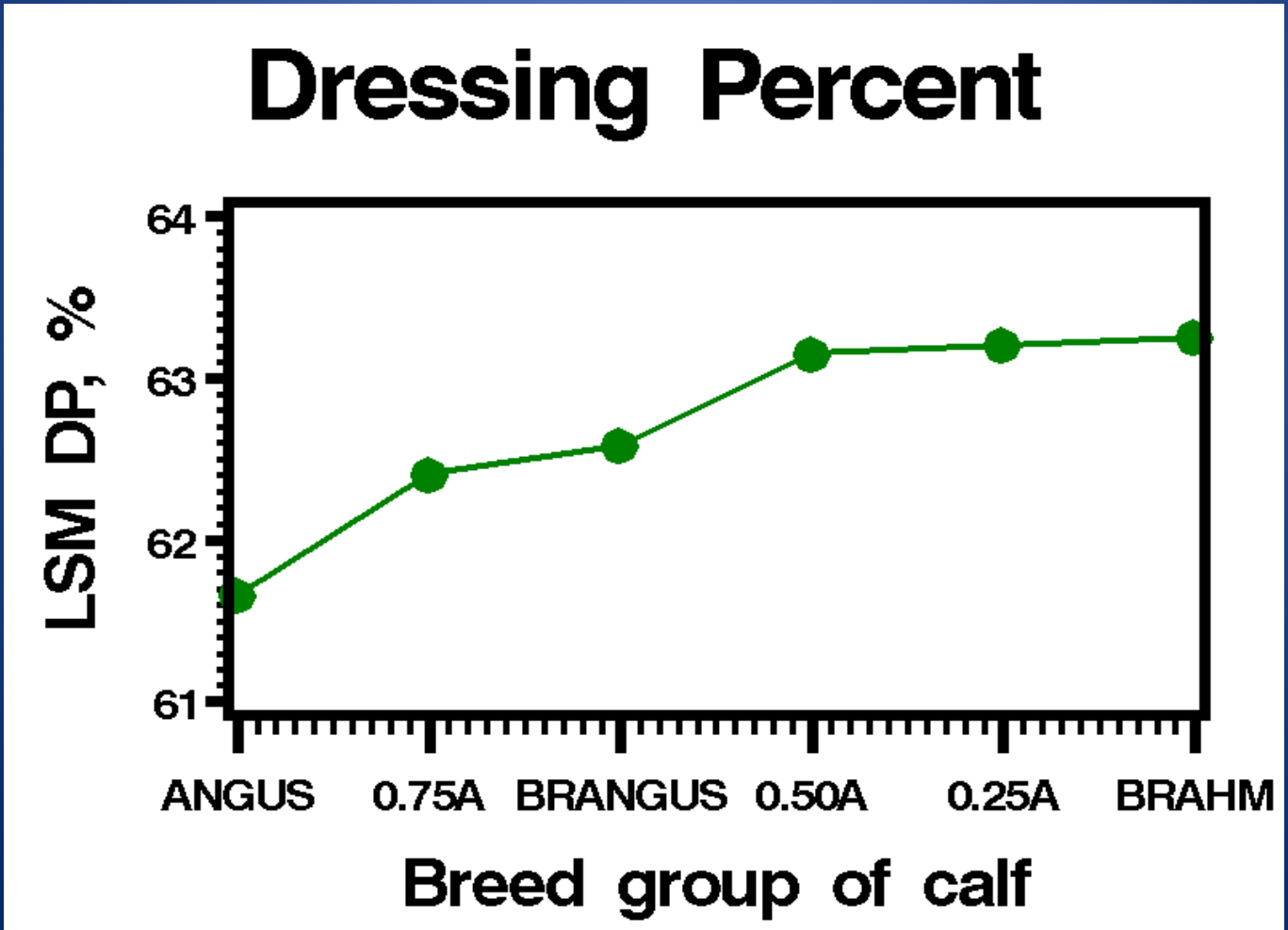
Breed Differences and Heterosis Effects for Hot Carcass Weight

Trait[a]	n	Effect	Estimate	Standard Error	Pr > |t|
HCW, lb	1359	Brah - Ang	6	7.6	0.44
		Heterosis	77	8.7	<0.0001



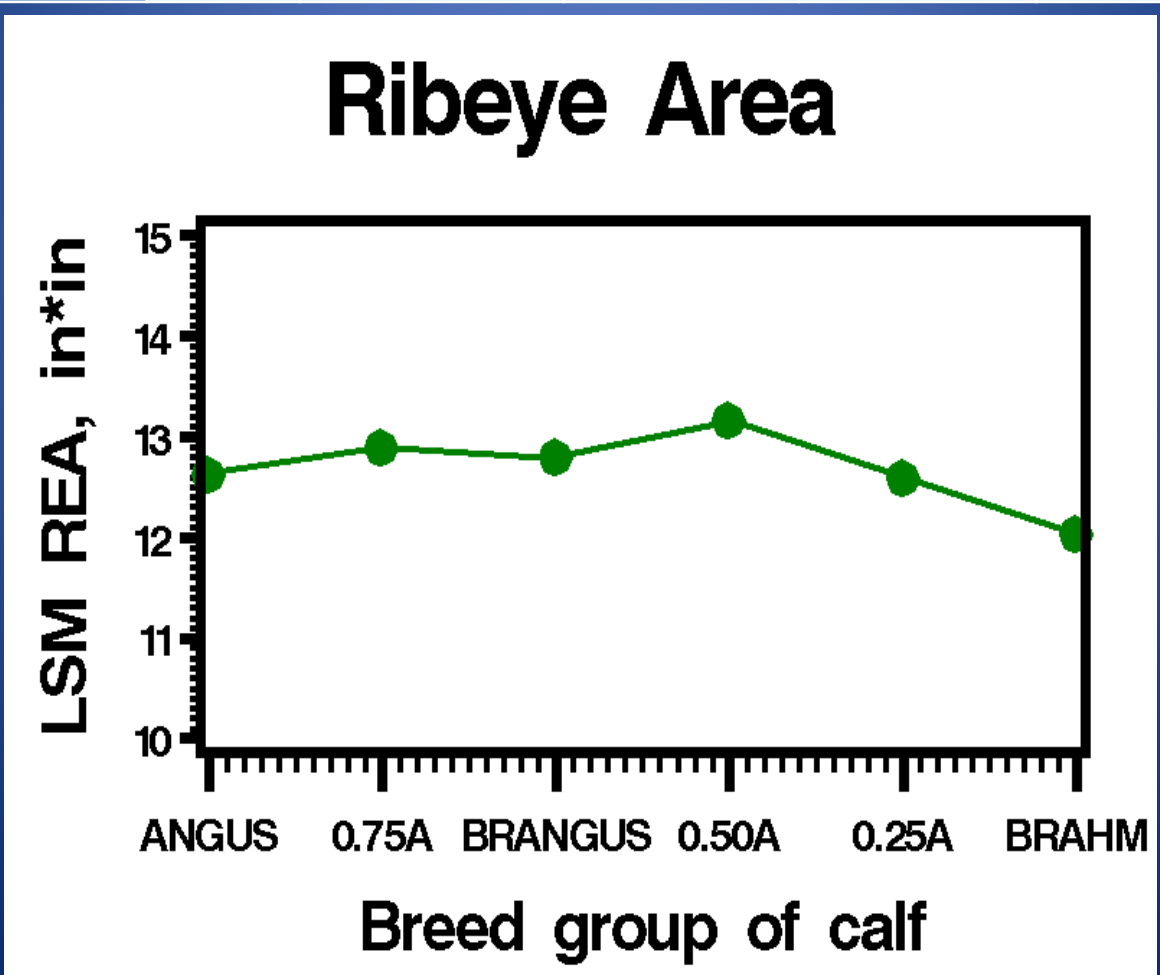
Breed Differences and Heterosis Effects for Dressing Percent

Trait[a]	n	Effect	Estimate	Std. Error	Pr > |t|
DP, %	1359	Brah - Ang	1.60	0.25	<0.0001
		Heterosis	0.69	0.29	0.017



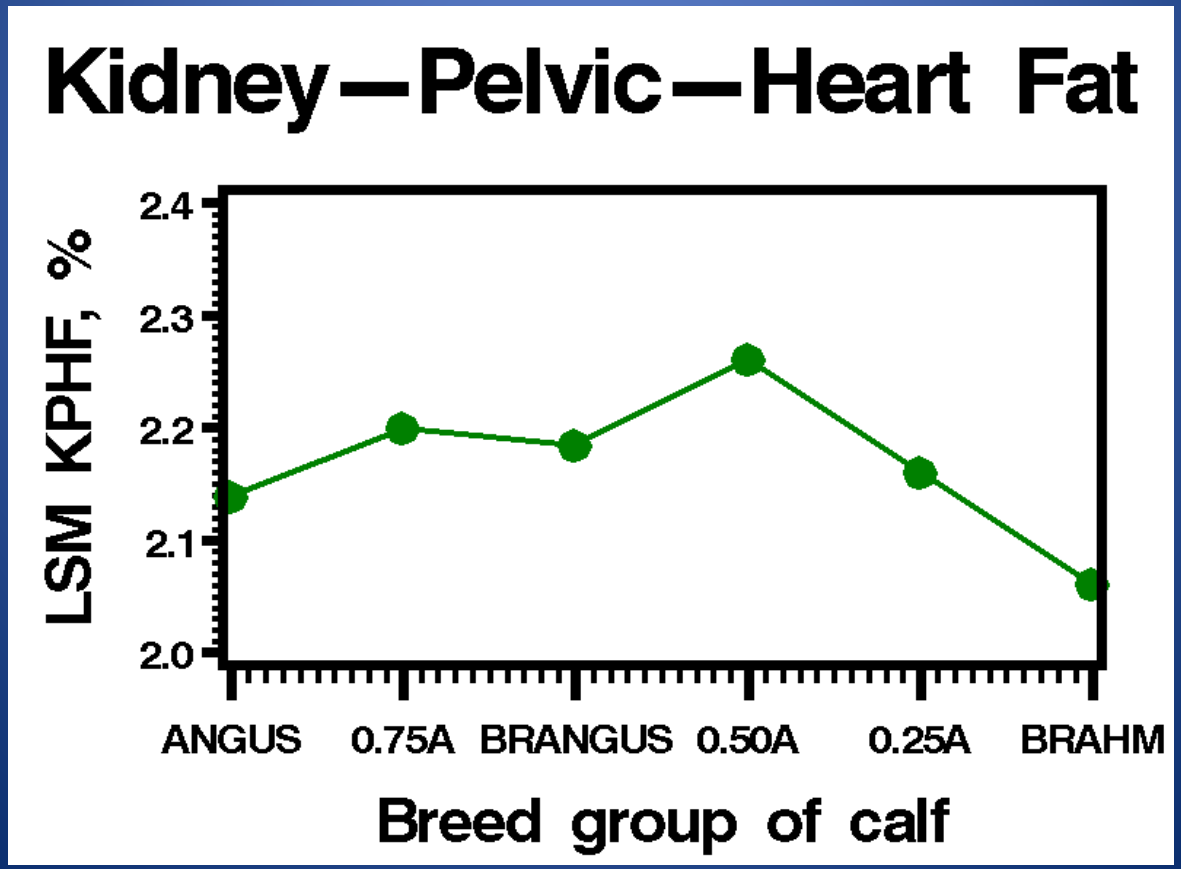
Breed Differences and Heterosis Effects for Ribeye Area

Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
REA, in^2	1328	Brah - Ang	-.59	0.14	<0.0001
		Heterosis	.82	0.17	<0.0001



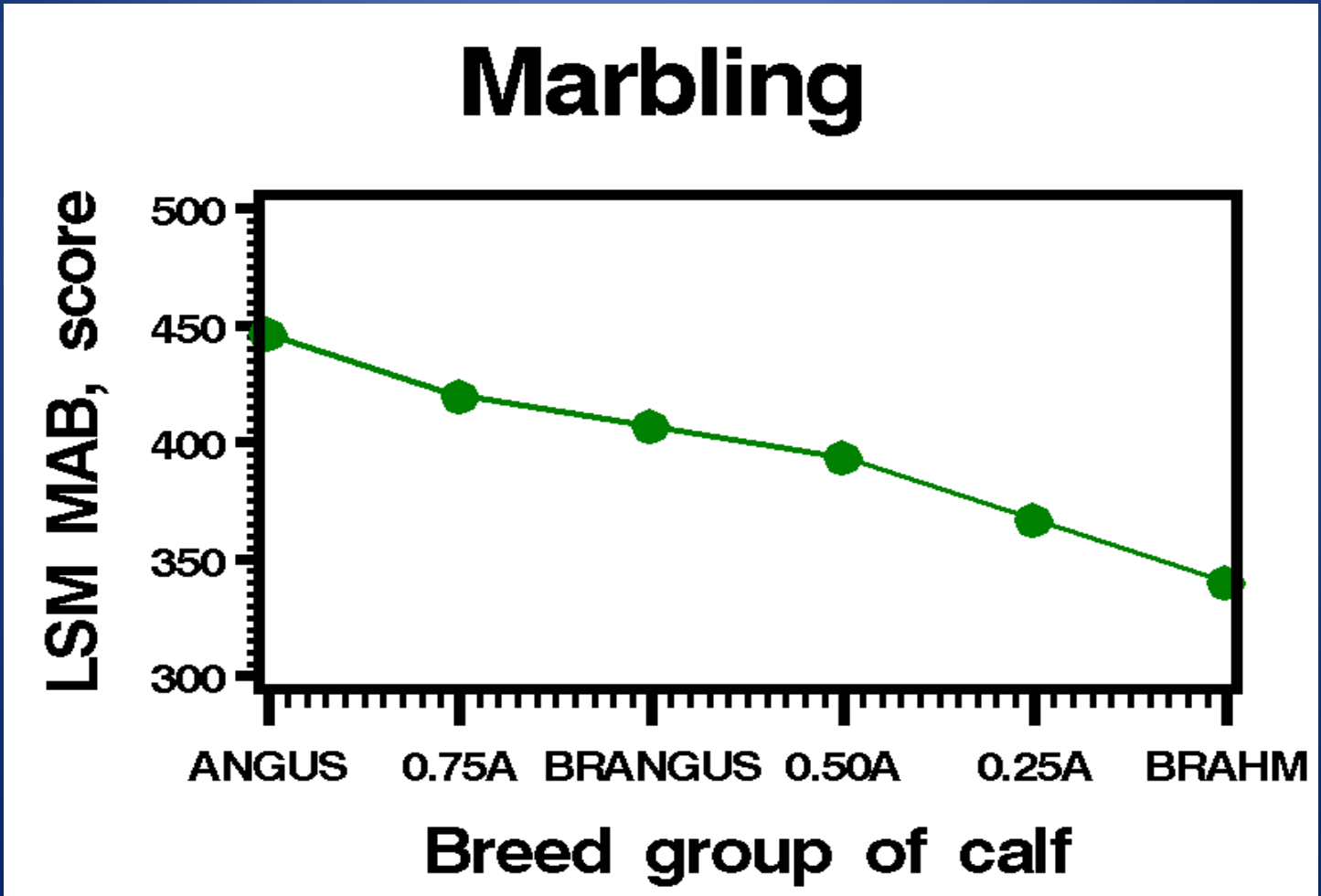
Breed Differences and Heterosis Effects for KPH Fat

Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
KPH, %	1275	Brah - Ang	-0.08	0.05	0.15
		Heterosis	0.16	0.06	0.01

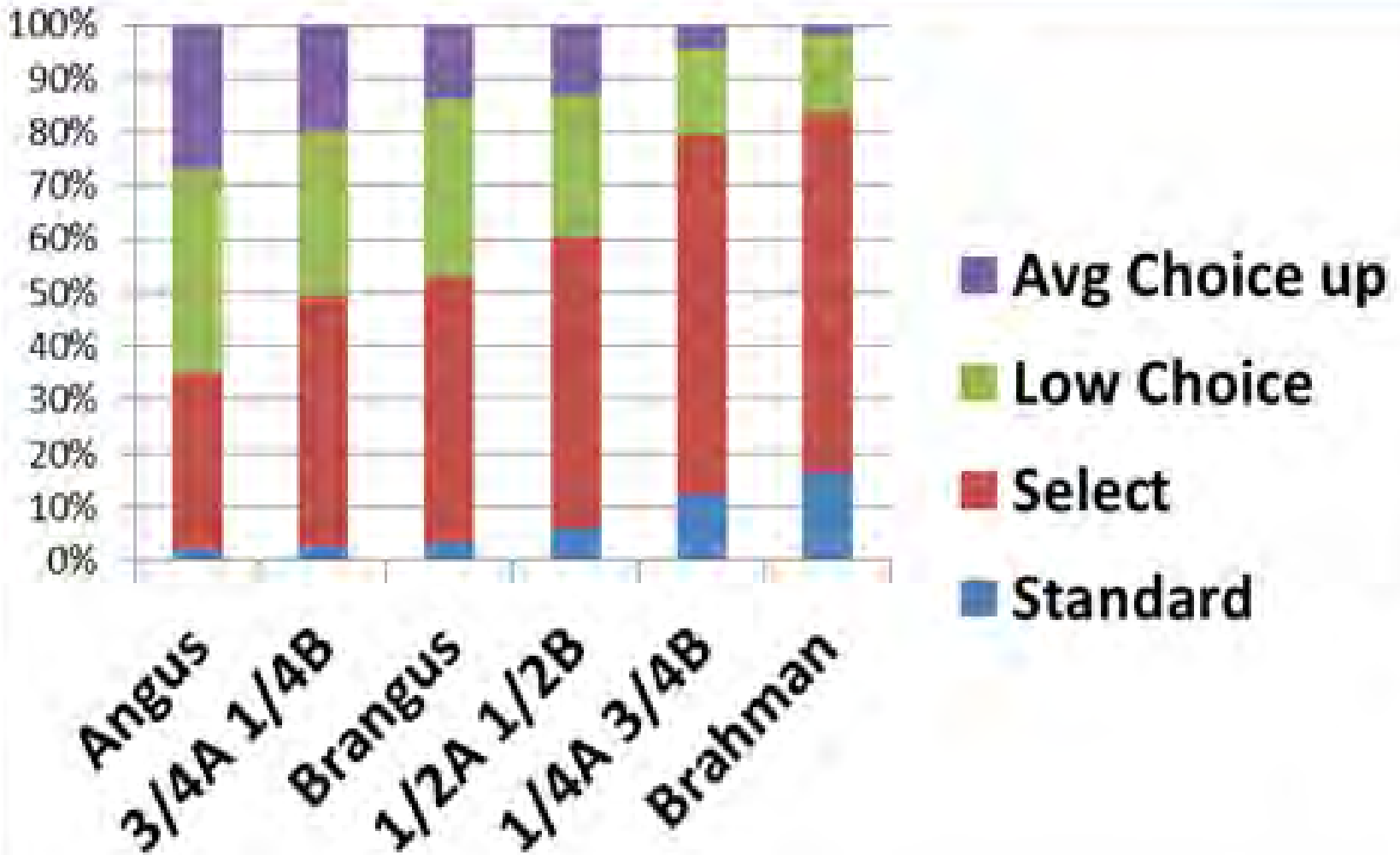


Breed Differences and Heterosis Effects for Marbling

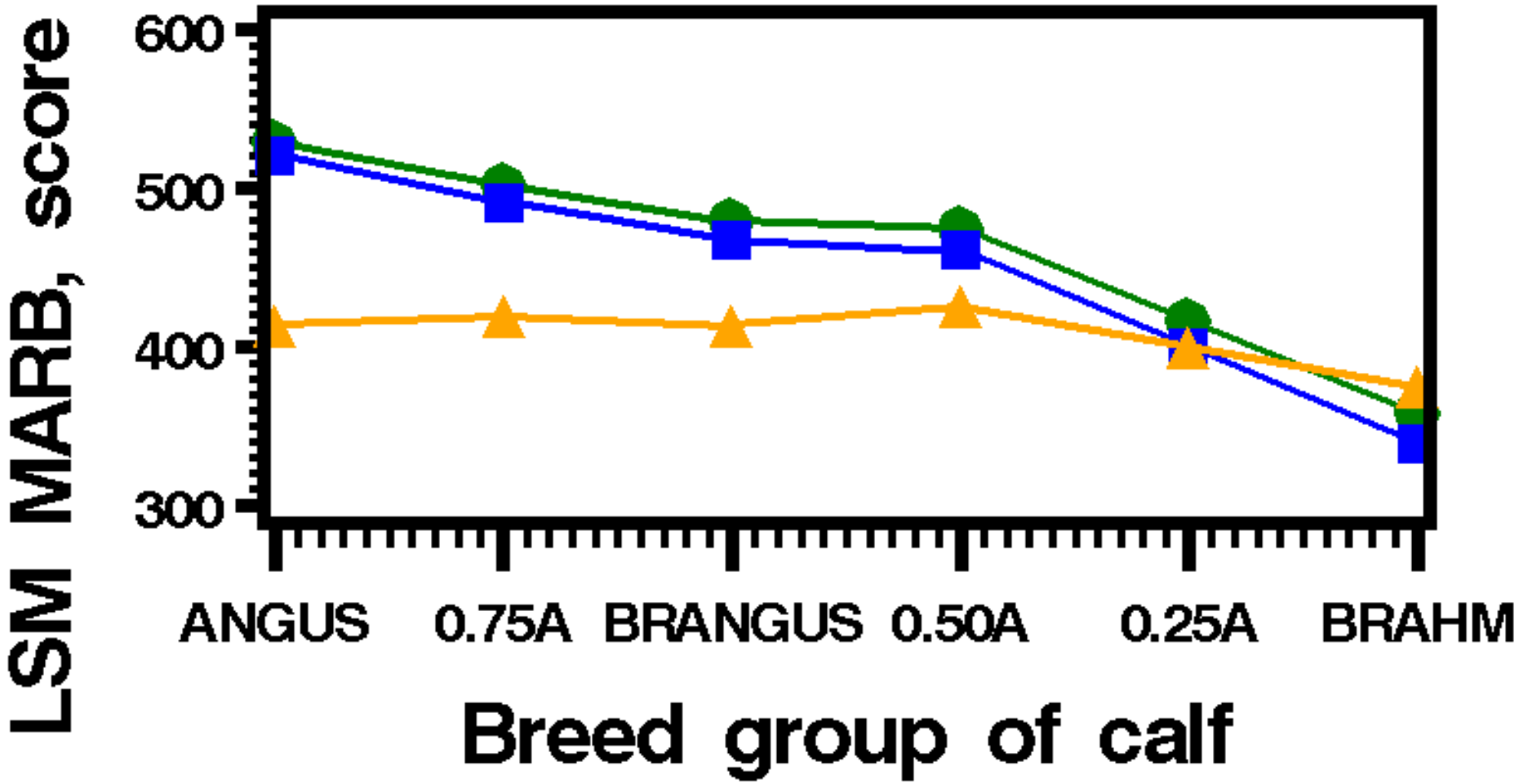
Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
Marbling	1357	Bra - Ang	-105.97	7.68	<0.0001
		Heterosis	0.26	8.83	0.98



Quality Grade

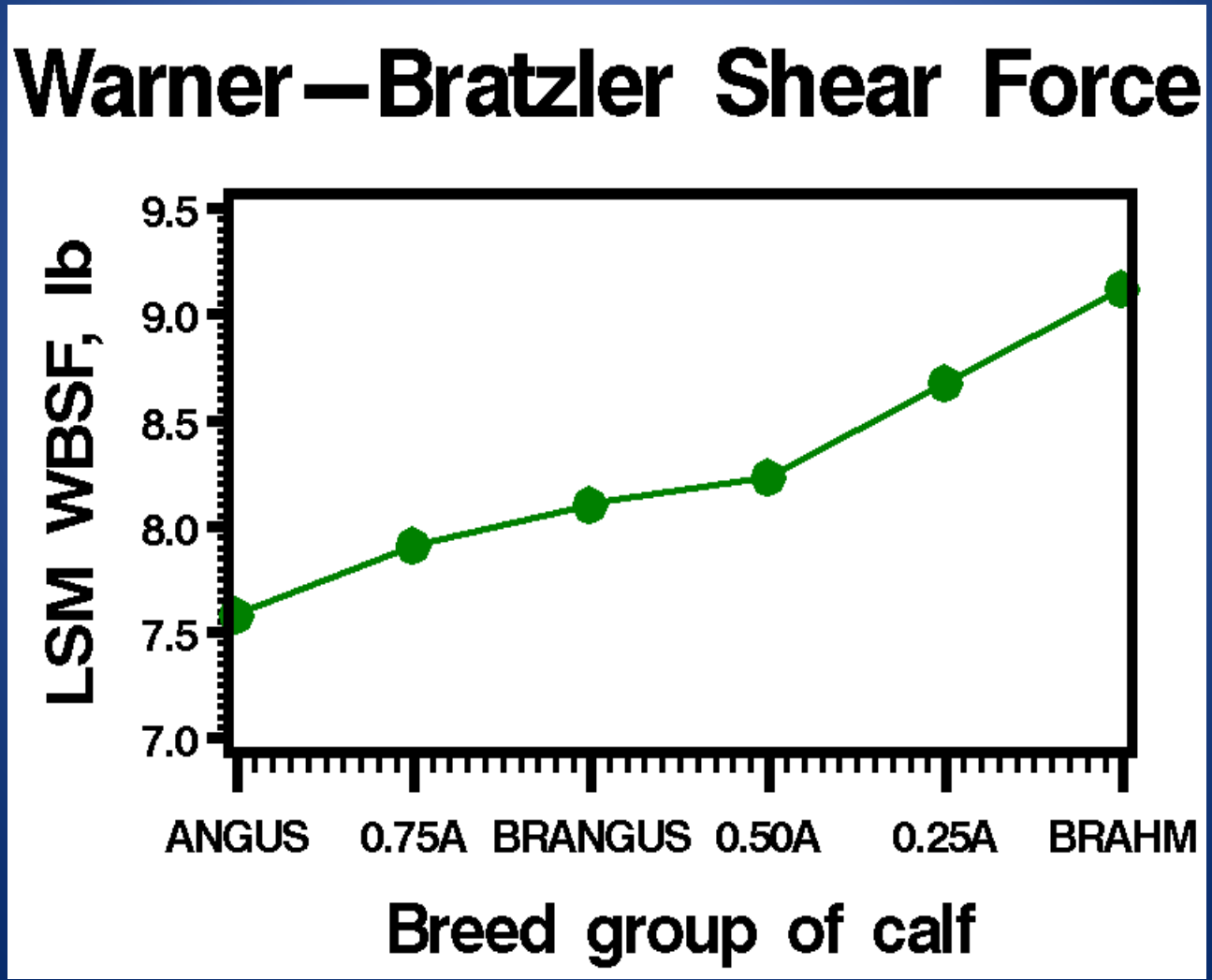


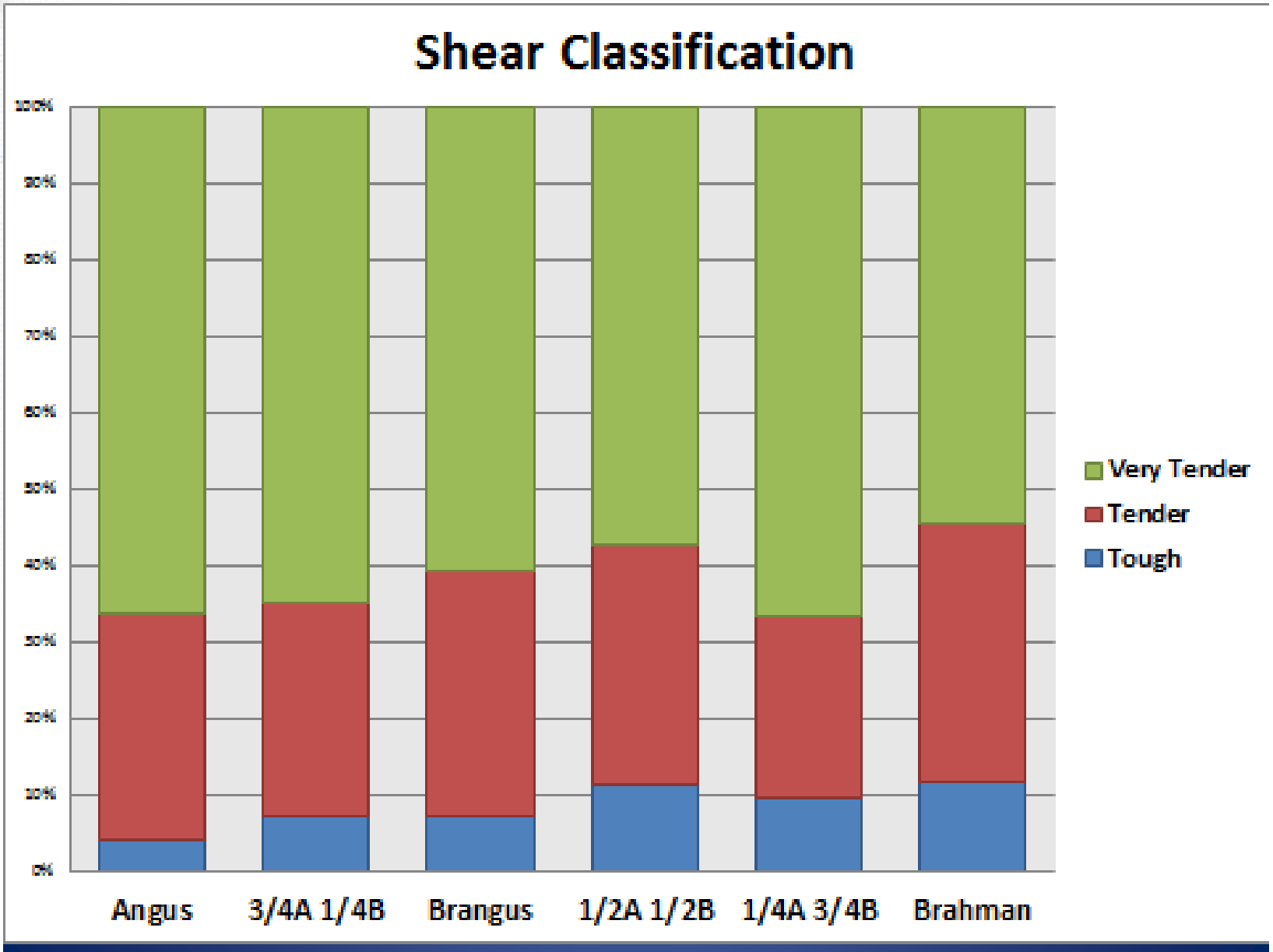
Marbling


LSM MARB, score
600
500
400
300
ANGUS
0.75A
BRANGUS
0.50A
0.25A
BRAHM
Breed group of calf
RFI Group
High
Med
Low

Breed Differences and Heterosis Effects for WBS Shear Force

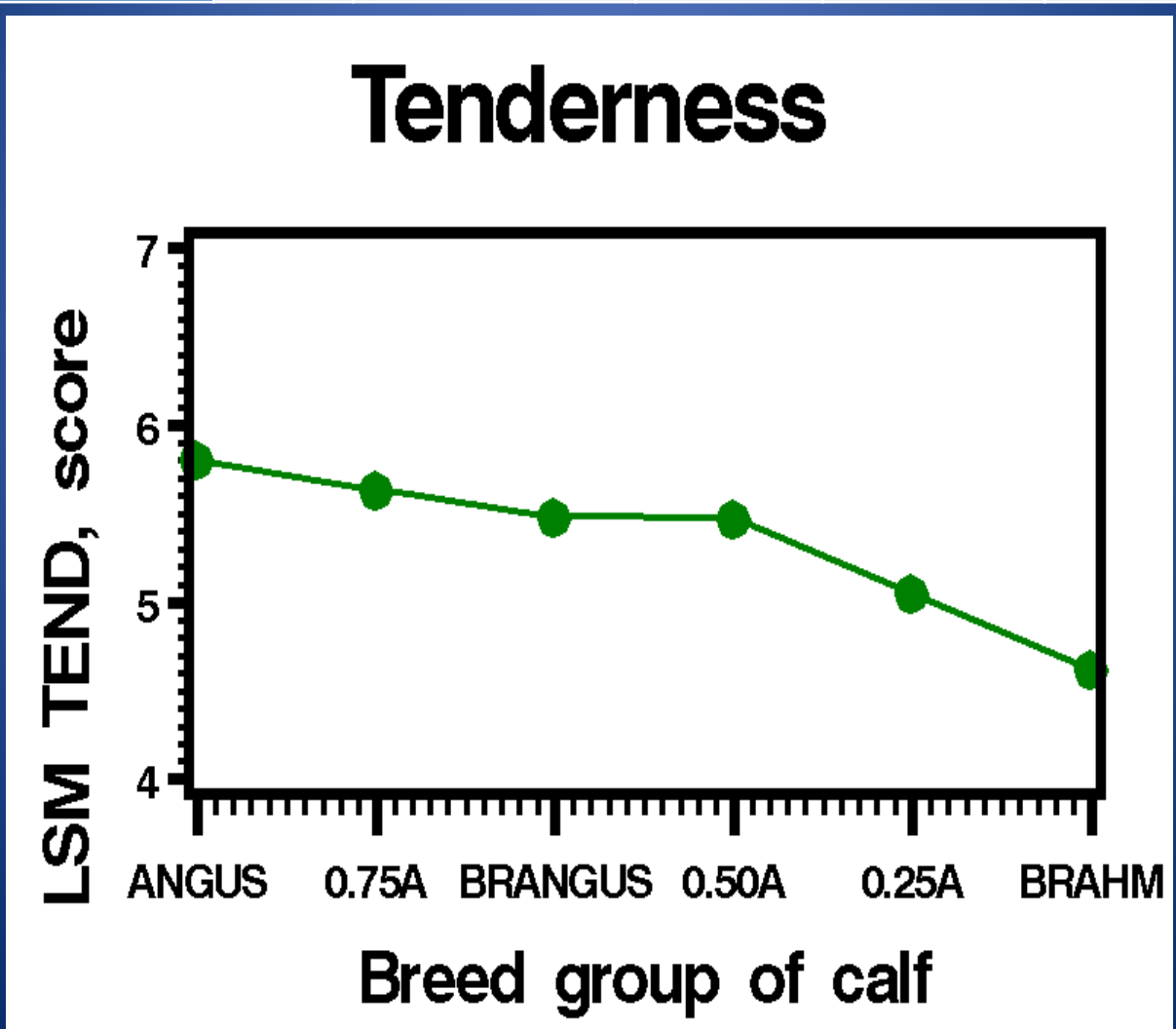
Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
WBSF, lb	662	Brah - Ang	1.5	1.10	<0.0001
		Heterosis	-0.12	1.33	0.68



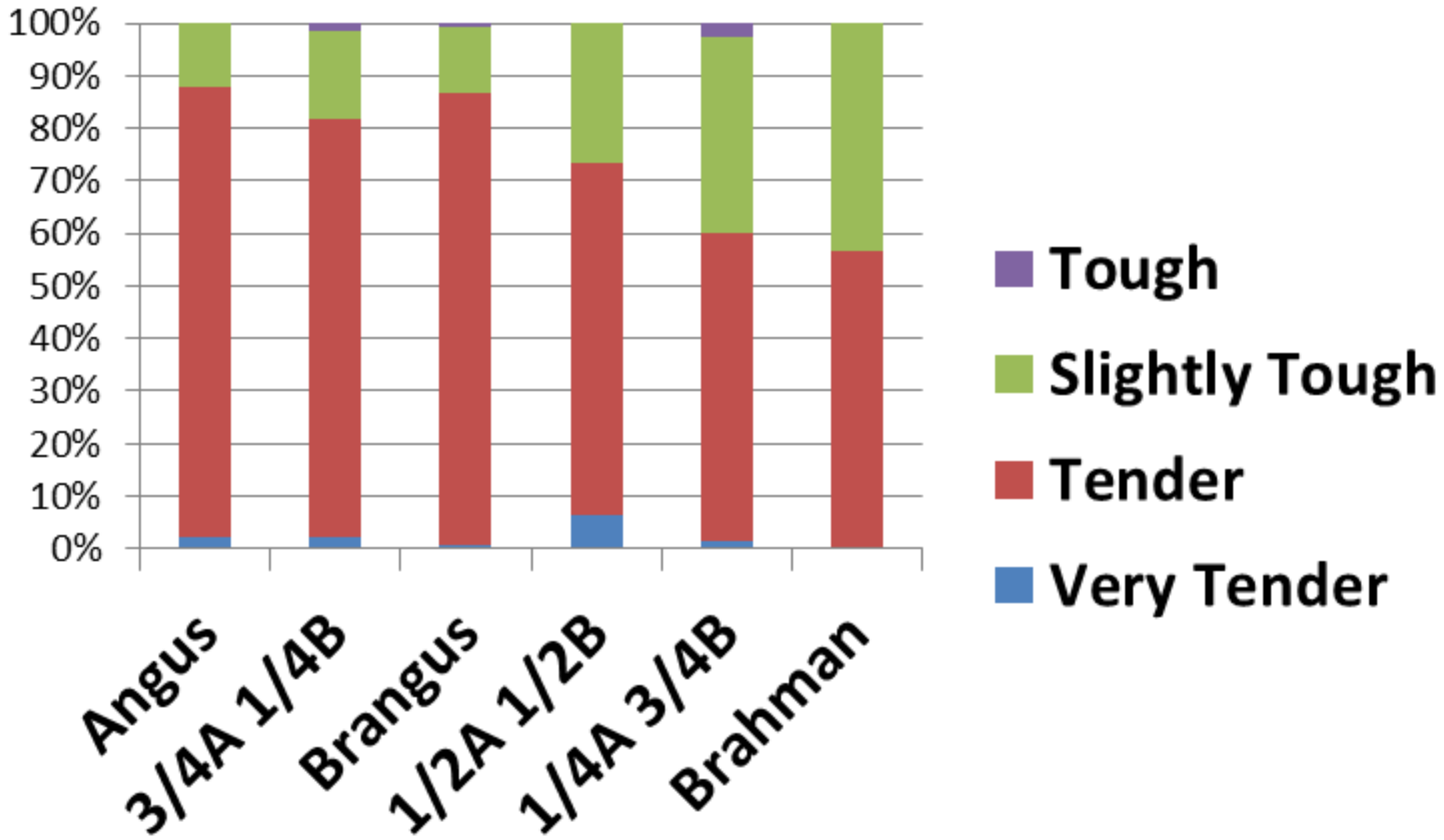

Shear Classification
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Angus
3/4A 1/4B
Brangus
1/2A 1/2B
1/4A 3/4B
Brahman
Very Tender
Tender
Tough

Breed Differences and Heterosis Effects for Tenderness

Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
TEND	352	Brah - Ang	-1.18	0.15	<0.0001
		Heterosis	0.26	0.17	0.13

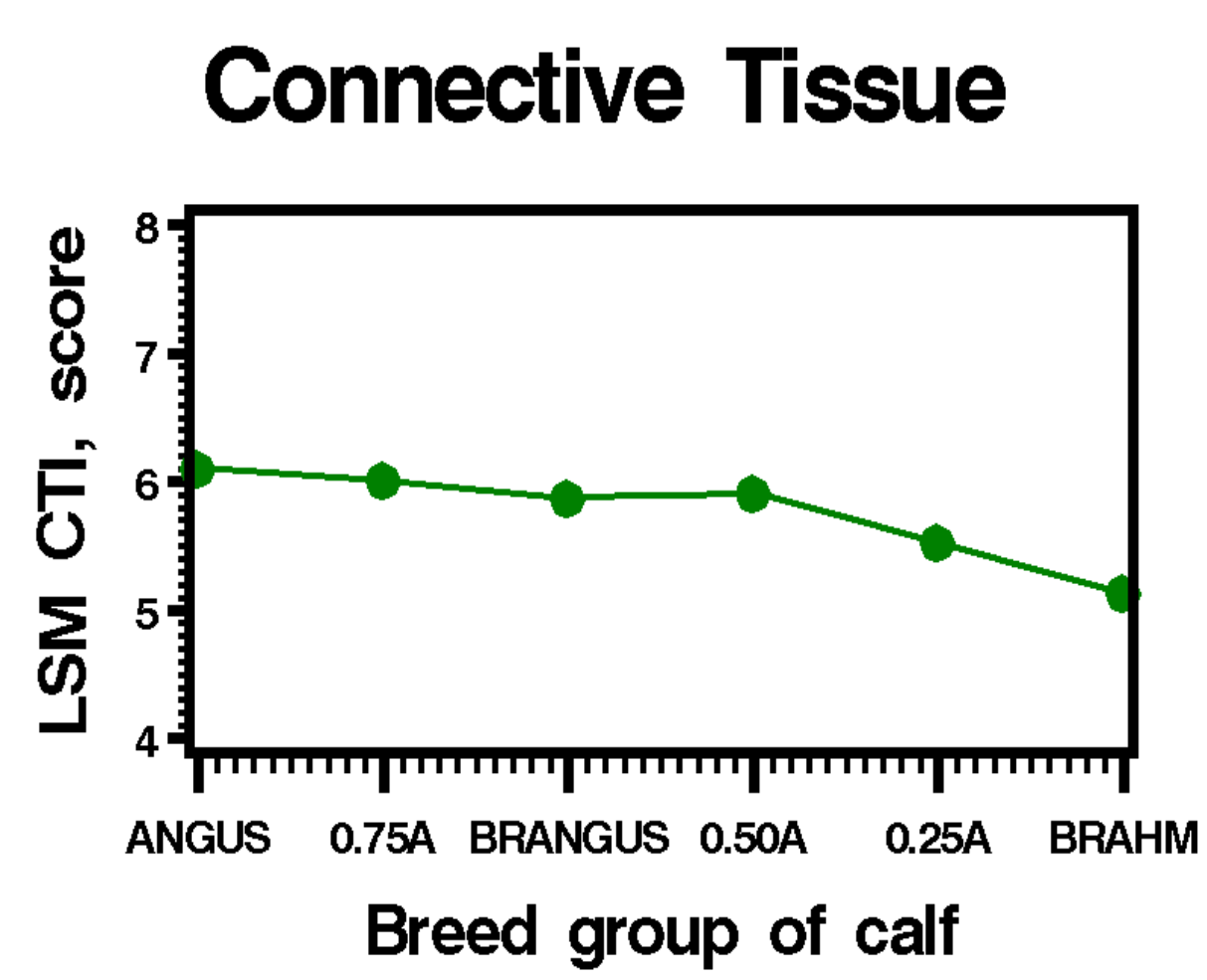


Sensory Panel Tenderness Scores



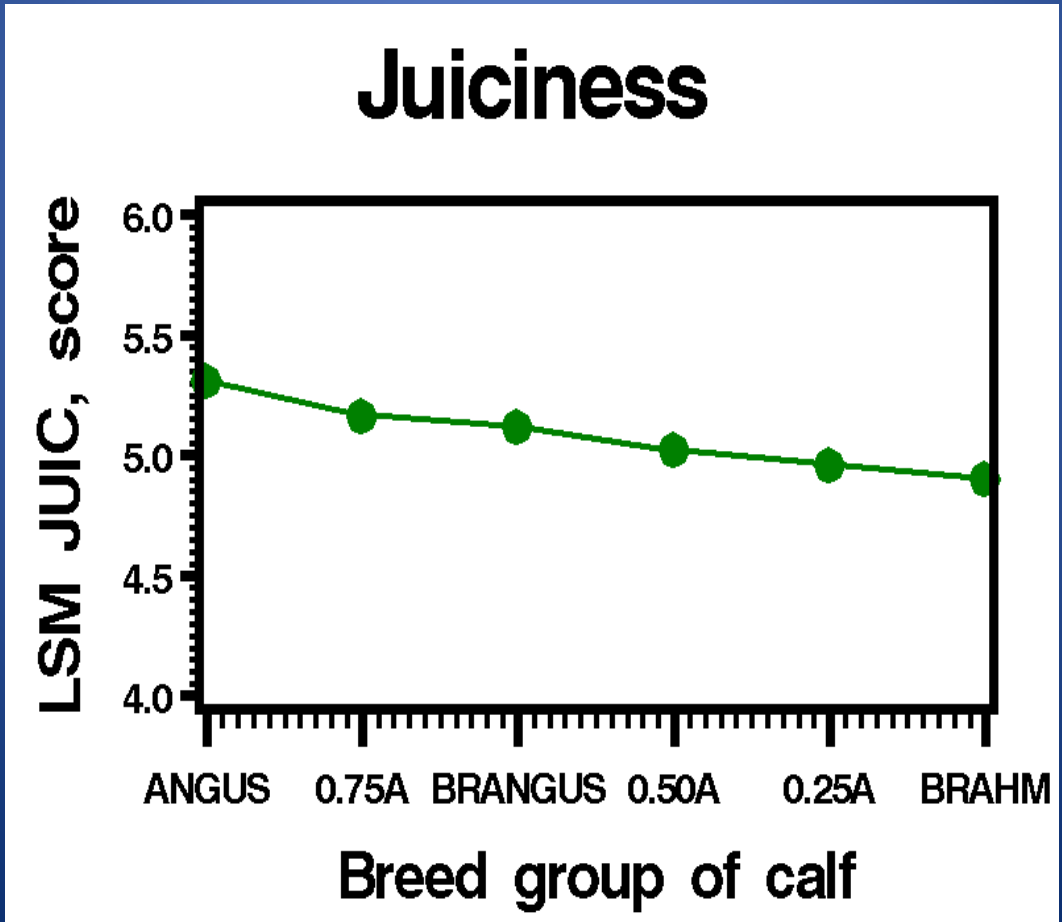
Breed Differences and Heterosis Effects for Connective Tissue

Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
CTI, units[c]	352	Brah - Ang	-0.97	0.14	<0.0001
		Heterosis	0.29	0.16	0.062



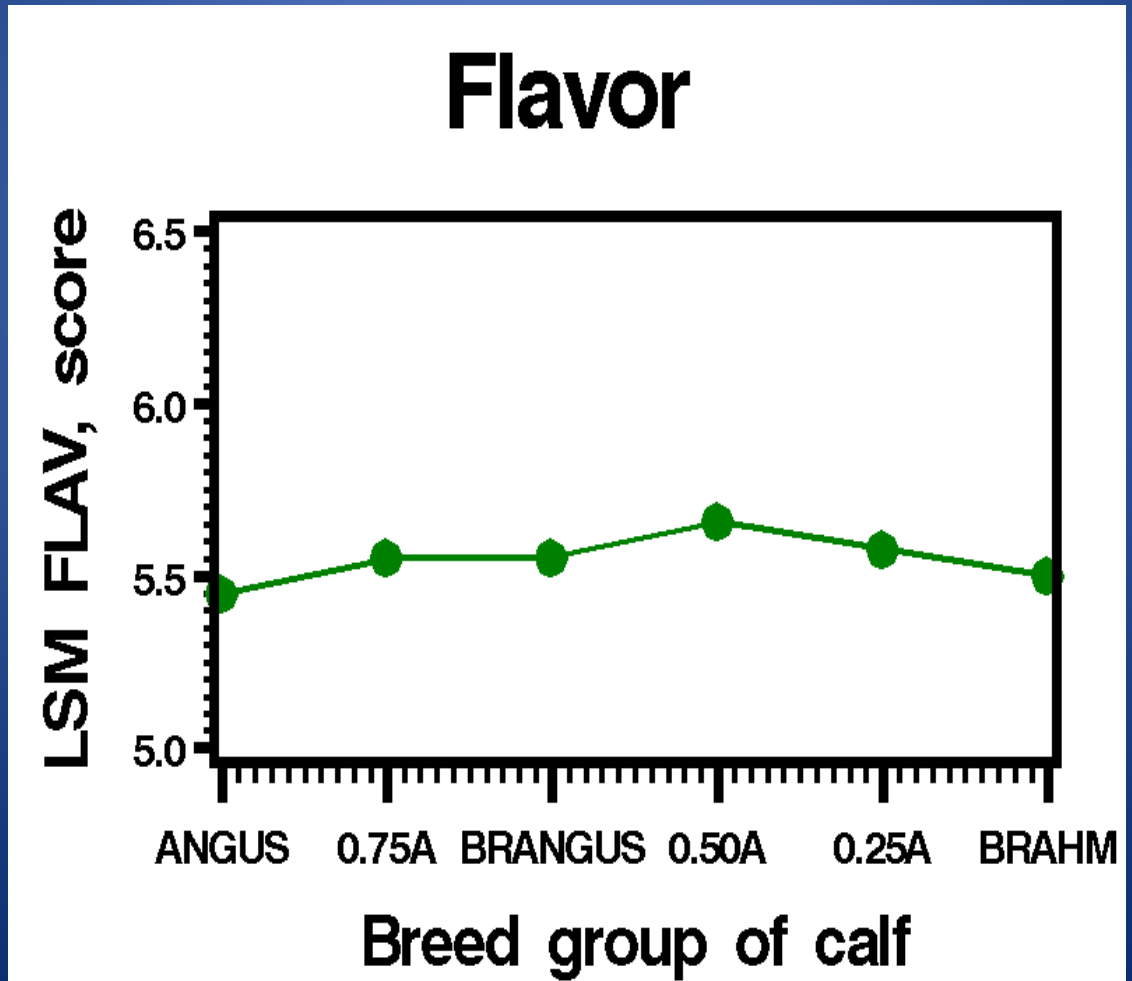
Breed Differences and Heterosis Effects for Juiciness

Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
JUICiNESS	352	Brah - Ang	-0.40	0.12	0.001
		Heterosis	-0.09	0.14	0.54



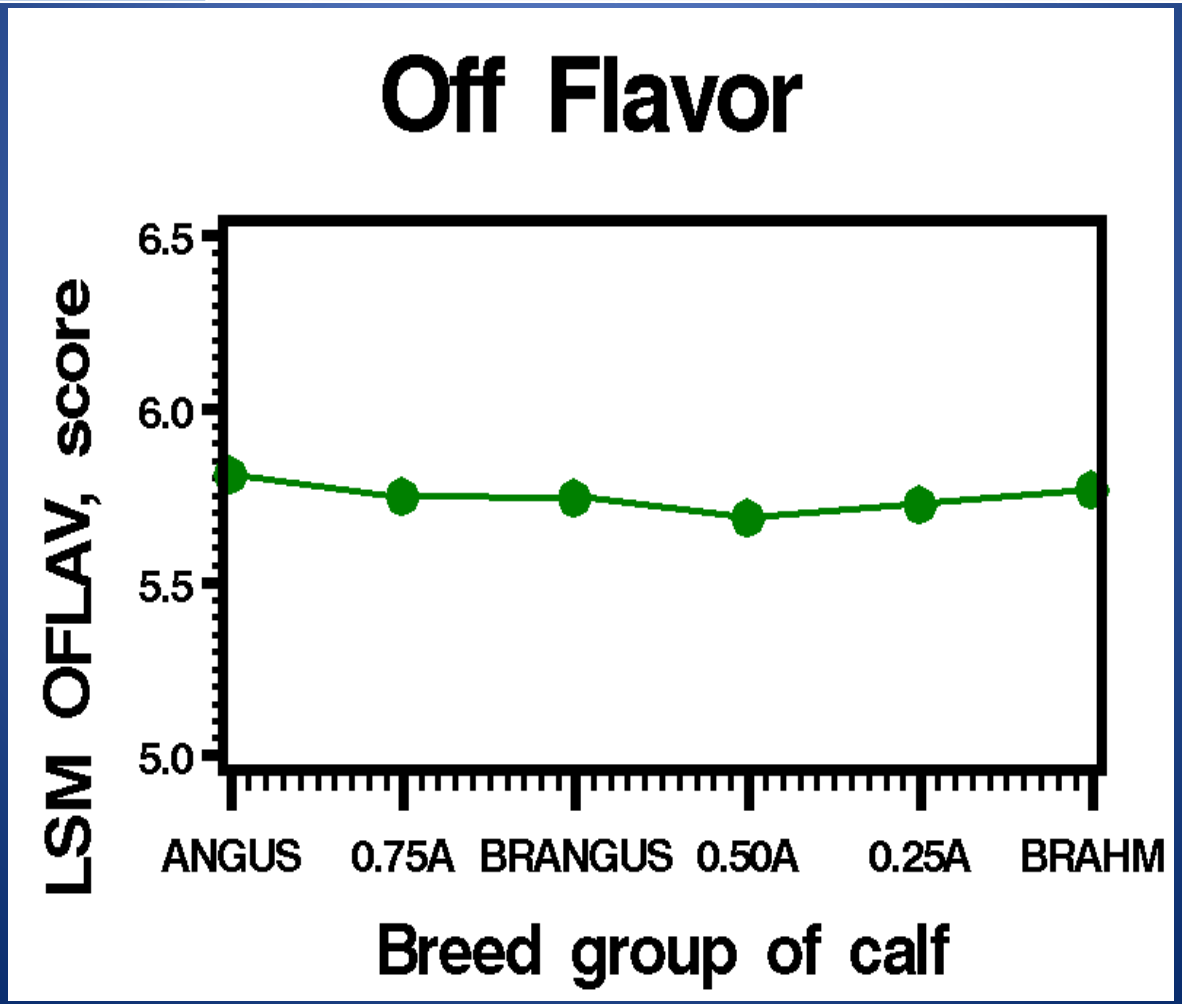
Breed Differences and Heterosis Effects for Flavor

Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
FLAVOR	352	Brah - Ang	0.05	0.09	0.56
		Heterosis	0.18	0.10	0.08



Breed Differences and Heterosis Effects for Off-Flavor

Trait[a]	n	Effect	Estimate	Std Error	Pr > |t|
OFF-FLAVOR	352	Brah - Ang	-0.04	0.07	0.57
		Heterosis	-0.10	0.08	0.22



In short …

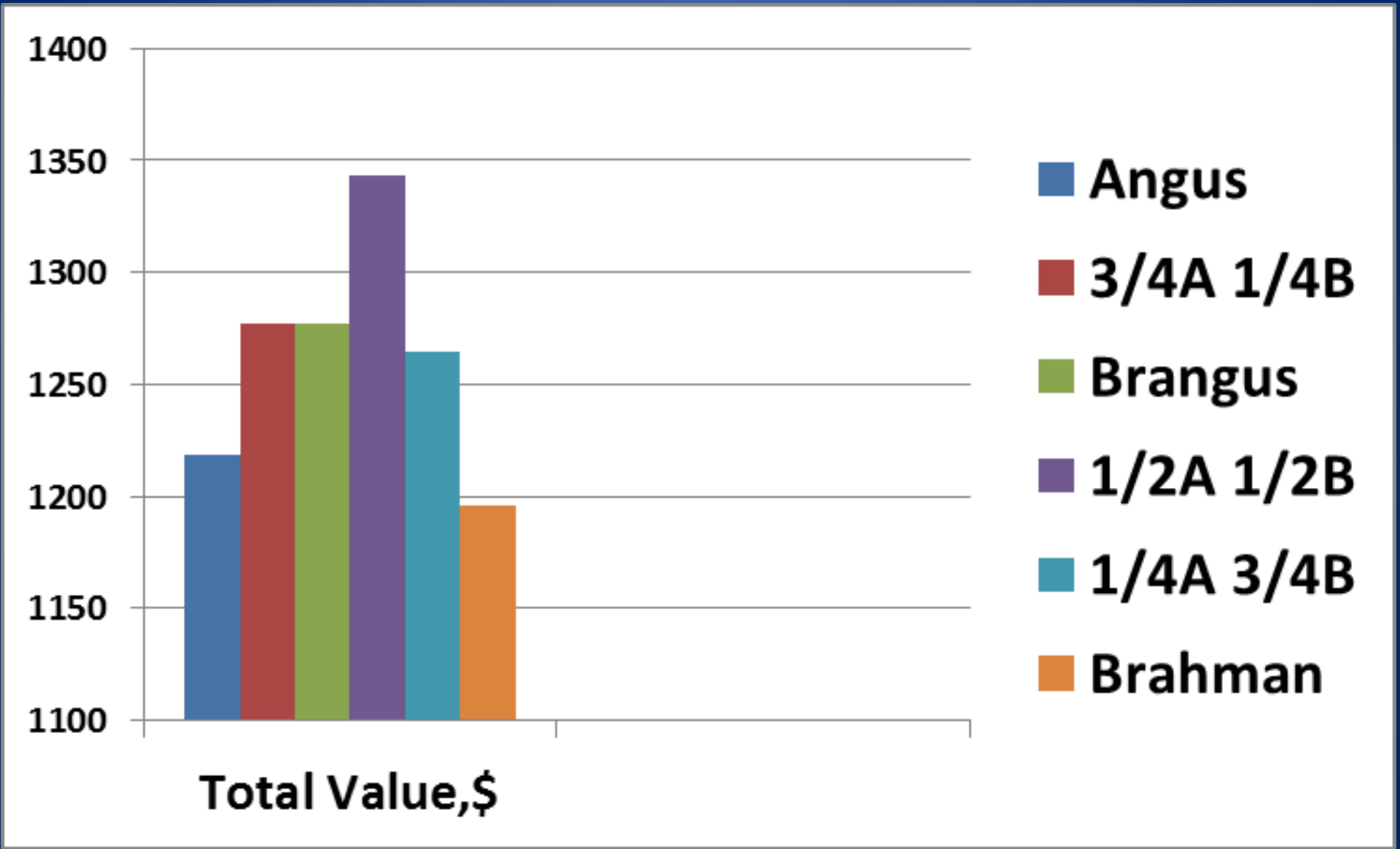
Brahman carcasses had similar HCW and KPH, but higher DP, lower MAB, smaller REA, and lower FOE than Angus carcasses

DP and WBSF increased as Brahman fraction increased

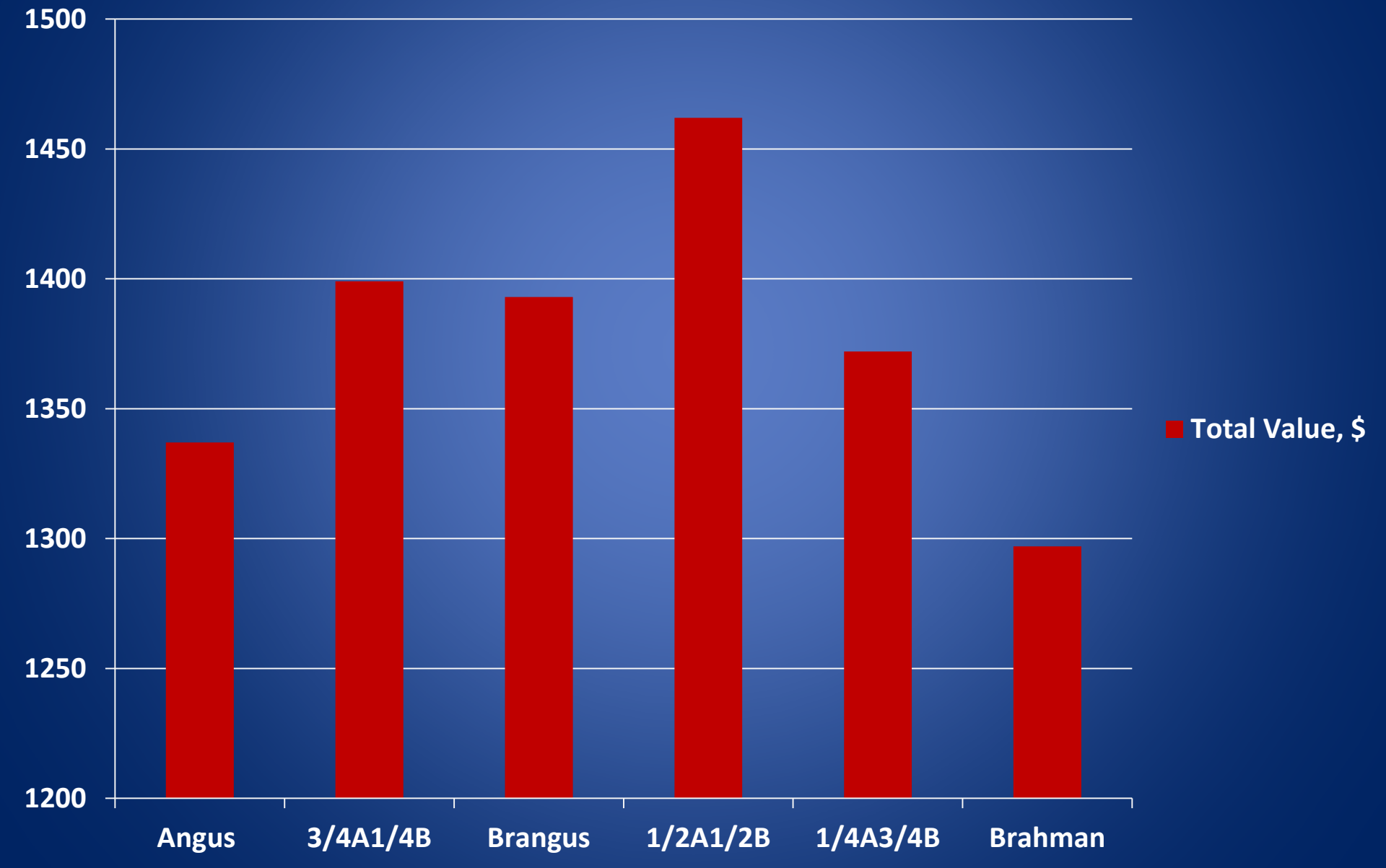
MAB, REA, FOE, TEND, CTI, and JUIC decreased as Brahman fraction increased

HCW, DP, REA, and FOE increased as heterozygosity increased

Total Animal Value, $



Total Animal Value, $




Questions?