

Evaluation of four summer annuals for southeastern forage finished beef production systems: Animal performance, carcass traits, and valuation

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Background

- The Producers
 - Increasing input costs
 - Climate of the Southeastern U.S.
 - Capitalize on growing markets
- Grass-finished market
 - Active consumers
 - Environmental concerns
 - “Health” conscious consumers
 - Community/local attitudes
- Optimize resources at hand (forages)



Photo: RL Stewart, Jr

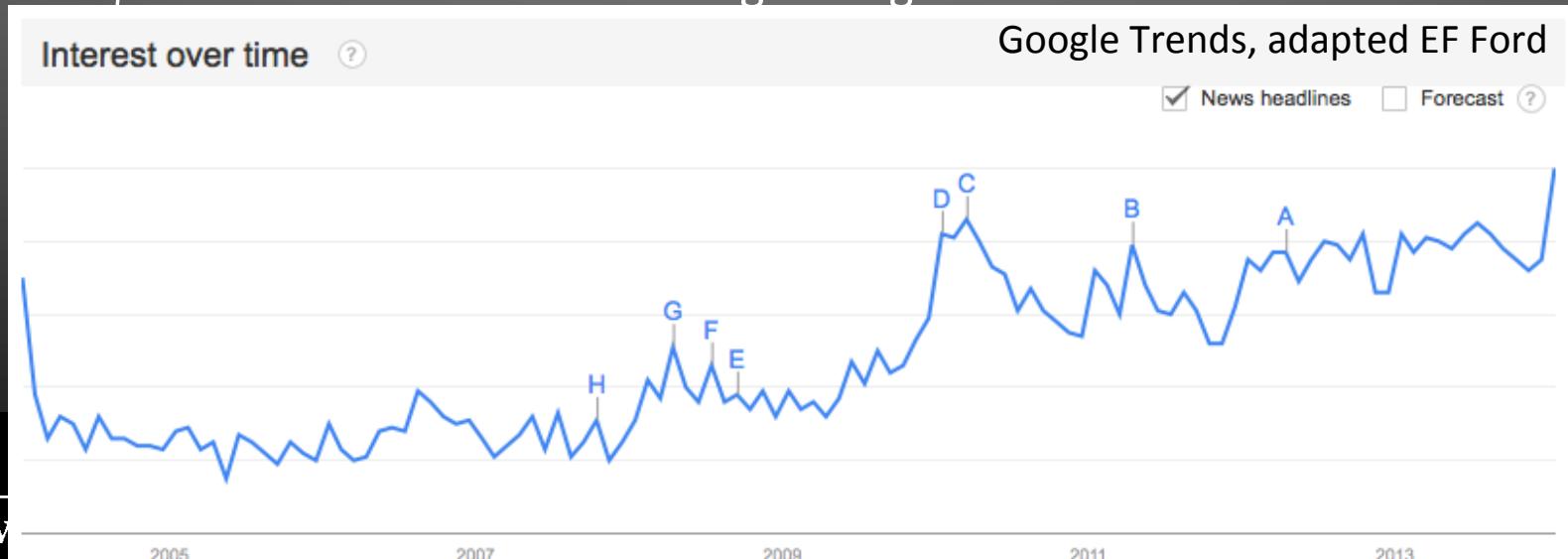


Grass-Fed Trends

(Lacy et al)

- Importance overall
 - 29% somewhat
 - 26% important
 - 10% very important
- Grass seeking consumers
 - Based on different auctions
 - 36% pay 12% Premium with no info
 - 63% pay 22% Premium with info (story)

Estimated \$2.5 billion retail market and growing



Cost Factors

- ~16% premium for grass over grain to be profitable (Berthiaume 2006)
 - Not everyone will pay this, but approx. 30-45% will pay some premium (Lacy 2007)
- Premium required and BE need to be updated
 - Current beef prices
 - Cx grid basis
 - SE Cx basis
 - Preliminary figures show that grass finished beef is selling 25-32% higher than SE commodity beef



Problem

- Most warm season perennials are lower in nutrient content than cool season alternatives
 - Maintenance vs Gain during summer months
- Year round beef production supply
 - Cool season, rapid gains
 - Hard to maintain in summer
 - Sell lighter less efficient cattle, or hold until cool season forage available – economics of holding, older animal
- Beef Quality vs Forage Quality



Objectives

- Evaluate 4 summer annual forages to maximize animal growth potential LW, ADG, US
- Determine effects of forage systems on beef Cx quality and yield grade
- Calculate BE pricing and % premium required for BE pricing under these forage systems
 - Based on YG/QG grid index & SE basis

USDA, AMS Reports



Forages

- Pearl millet (PM)
 - Drought and heat tolerant
- Crabgrass (CG)
 - High palatability
 - Tolerant of defoliation
- Brown midrib (BMR) sorghum sudangrass
 - Drought tolerant
 - Lower lignin content → increase in digestibility
- Sorghum sudangrass (SS)
 - Drought tolerant



Photo: AM Stelzleni

4 trt with 4 pastures/treatment*yr⁻¹
PM
PMCG
BMR
SS



Summer Annual Grazing Trials at Eatonton



Experimental Design and Treatments

- Eatonton Beef Research Center 2014-2016
 - Eatonton, Georgia
- 16- 0.73 ha pastures
 - 75-85 days
 - June-September
- 2 steers per pasture as experimental animals (n=32)
- *Put and take steers utilized to manage available forage



Field Data Collection

- Animal
 - Weigh, ADG
 - Ultrasound for body composition
 - Beginning, Middle, End
- Forage
 - Mass
 - Nutrient analysis
 - Every 2 weeks or
 - as steers are rotated

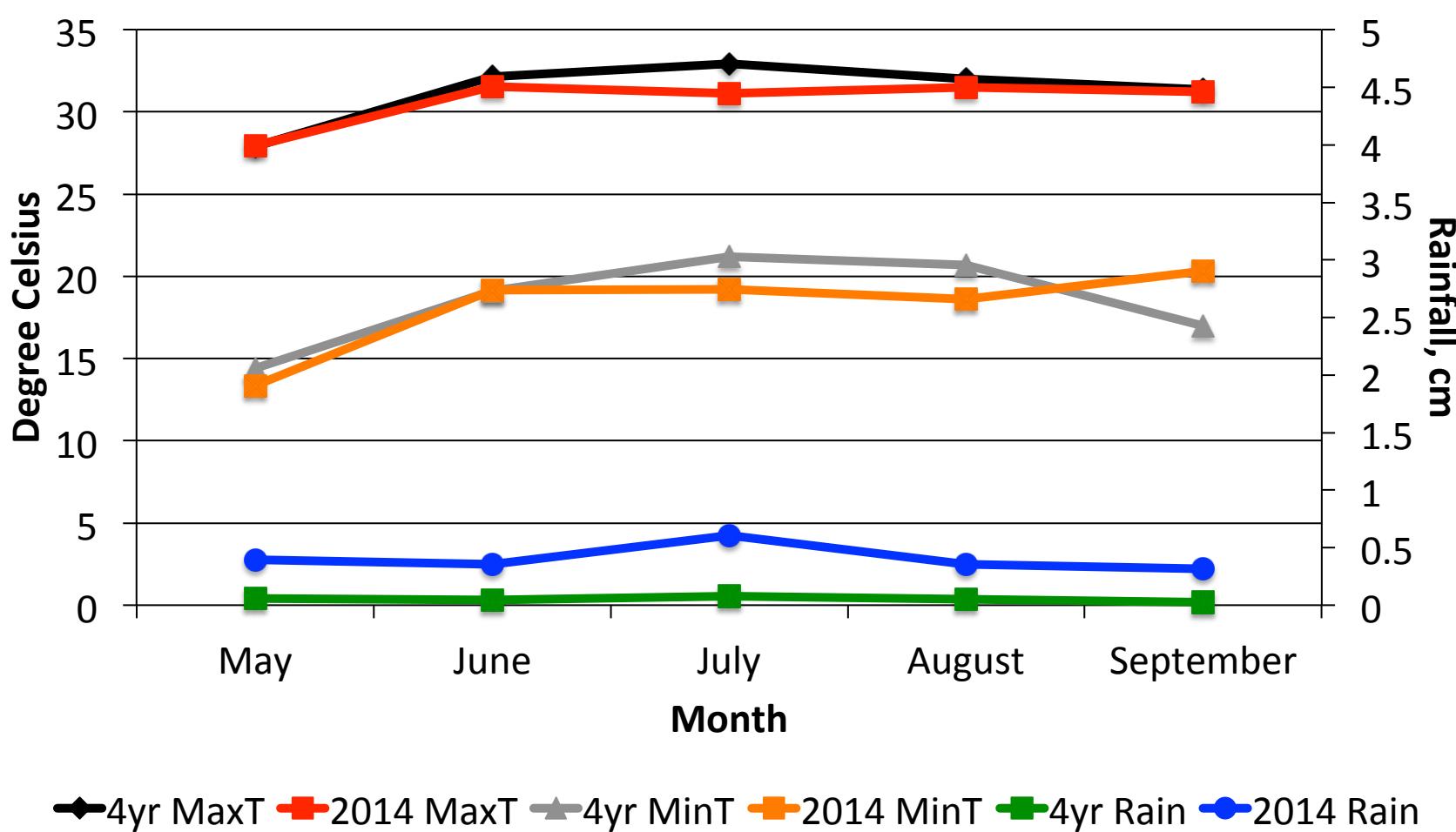


Carcass Data

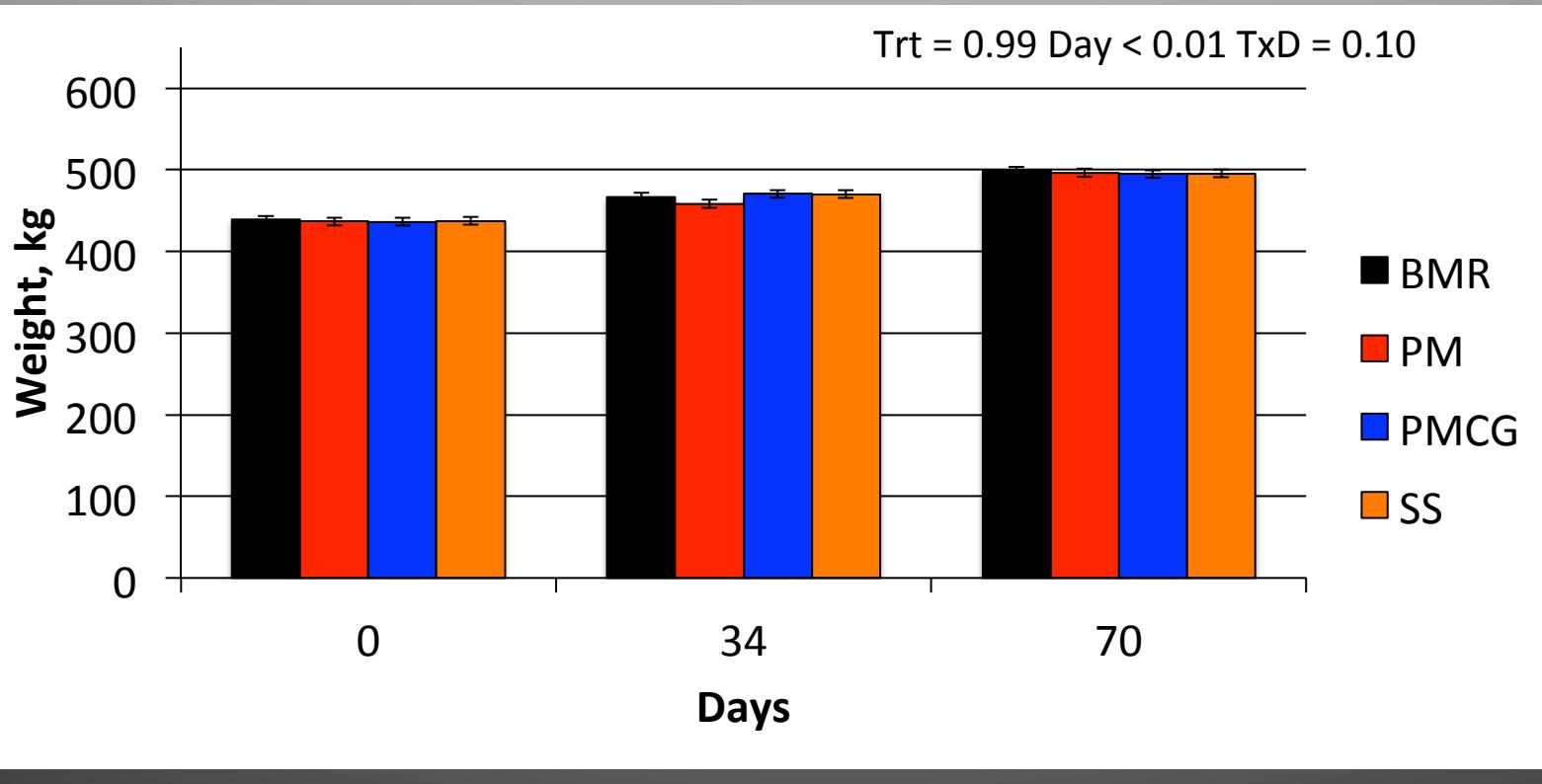
- Slaughter
 - Shrunk BW, Dress %
 - 24 hr PM YG and QG
 - Pricing USDA-AMS
 - Se basis
 - Cx grid basis



4 Year Weather Averages v.2014



Live Animal Performance

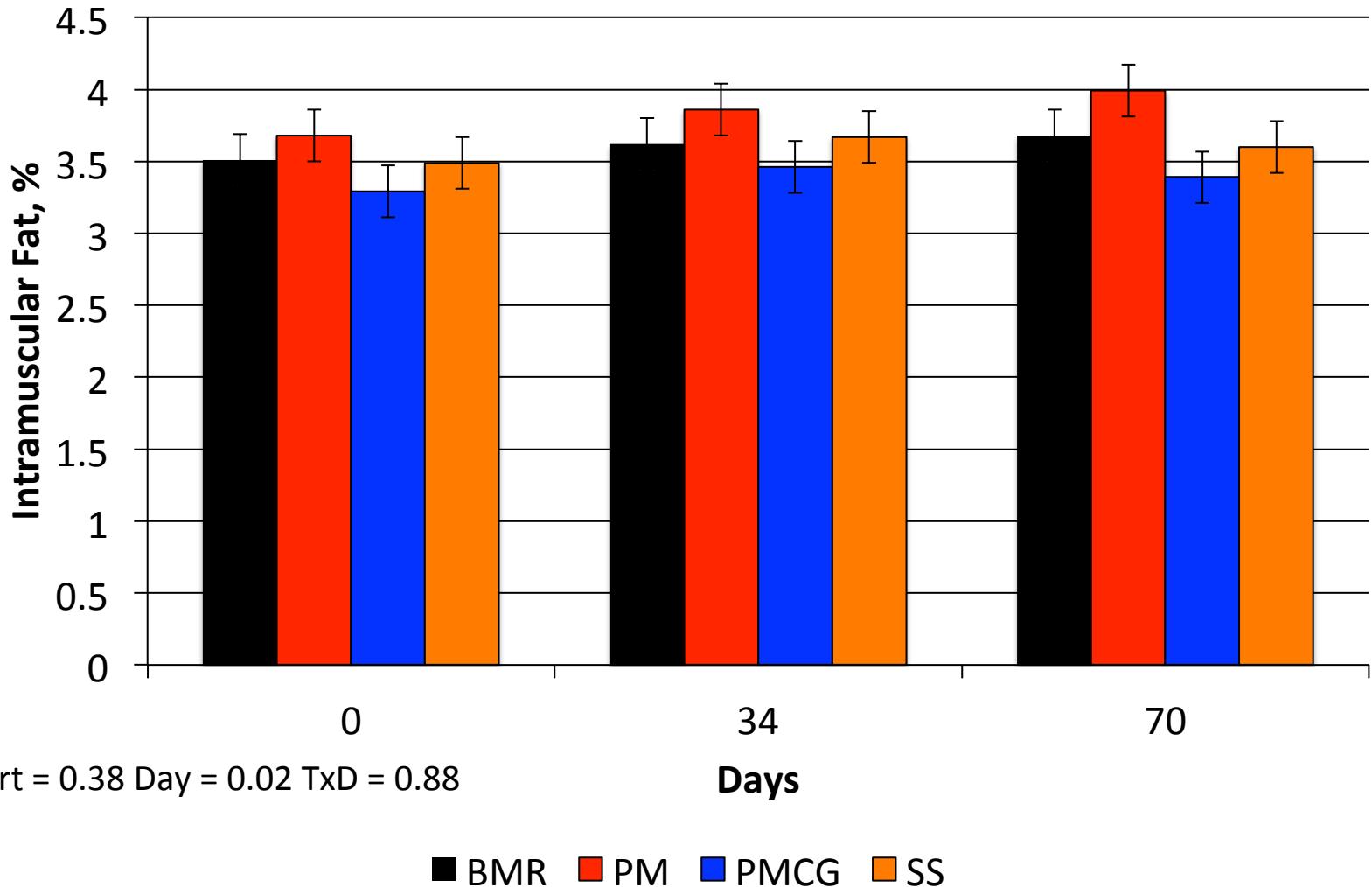


Treatment					
	BMR	PM	PMCG	SS	SEM
ADG, kg	0.86	0.85	0.83	0.83	0.06



P = 0.99

Ultrasound Composition



Carcass yield characteristics when steers are finished on warm-season annuals

	Treatment				
	BMR	PM	PMCG	SS	SEM
Shk wt, kg	464.02	460.42	456.12	460.31	7.90
HCW, kg	267.39	267.45	263.71	270.25	5.50
DP, %	57.61	58.10	57.80	58.72	0.67
REA, cm ²	73.87	73.55	71.45	73.95	2.62
FT, cm	0.50	0.59	0.49	0.49	0.07
KPH, %	1.75	1.38	1.13	1.38	0.18
YG	1.97	1.99	1.92	1.89	0.16



Carcass quality characteristics when steers are finished on warm-season annuals

	Treatment				
	BMR	PM	PMCG	SS	SEM
Marbling	SI 65	Sm 16	SI 66	SI 98	18.48
L-Mat	B 09	B 18	B 16	B 00	10.19
S-Mat	A 29	A 35	A 31	A 34	3.25
O-Mat	A 52	A 59	A 57	A 50	5.12
Lean S Color	4.50	4.38	3.88	3.88	0.32
Fat S Color	3.13	3.13	3.38	3.38	0.34
QG	Se	Ch-	Se	Se	---

Lean S color: 1=extremely dark red; 4=slightly dark cherry red; 8=extremely bright cherry red.

Fat S color: 1=white; 3=slightly yellow; 5=yellow.



Valuation and break-even pricing*, carcass grid basis

	Treatment				
	BMR	PM	PMCG	SS	SEM
Initial Value	1,627.81	1,577.30	1,604.45	1,598.30	25.89
Cx \$/Cwt	220.00	226.00	221.00	228.00	0.04
Total Cx \$	1,300.62	1,337.63	1,287.78	1,358.23	45.71
Cx Loss \$	-327.21	-239.65	-316.69	-239.87	28.00
\$ BE Req Cx	56.12	41.20	55.39	40.81	5.71
% Prem Req	25.81	18.50	25.75	18.18	3.02
Cx BE \$/Cwt	276.47	267.66	276.30	268.43	2.84

Cx \$/Cwt – Based on USDA QG/YG/Wt grid basis on day of slaughter, USDA-AMS daily carlot report.

Yellow indicates tendency $P < 0.10$ within row.

*Accounts for seeding and fertilizer costs.

Grass based pricing at slaughter: \$275-295/Cwt.

Grass based pricing today: \$305-350/Cwt.



Valuation and break-even pricing*, Select carcass basis

	Treatment				
	BMR	PM	PMCG	SS	SEM
Initial Value	1,627.81	1,577.30	1,604.45	1,598.30	25.89
Cx \$/Cwt	223.14	223.14	223.14	223.14	---
Total Cx \$	1,315.41	1,315.69	1,297.28	1,329.50	24.39
Cx Loss \$	-312.42	-261.59	-307.19	-268.60	15.64
\$ BE Req Cx	53.32	44.52	53.16	45.31	2.80
% Prem Req	23.90	19.95	23.82	20.30	1.27
Cx BE \$/Cwt	276.47	267.66	276.30	268.43	2.84

Cx \$/Cwt – Based on USDA Select Cx equivalent basis on day of slaughter, USDA-AMS.

Yellow indicates tendency $P < 0.10$ within row.

*Accounts for seeding and fertilizer costs.

Grass based pricing at slaughter: \$275-295/Cwt.

Grass based pricing today: \$305-350/Cwt.



Conclusions

- No diff in live traits
 - PM and SS numerically larger Usrea and PM numerically more Usimf
- No diff Cx traits
 - PM numerically Choice, SS close to Se/Ch break
- Valuation
 - PM and SS numerically lower \$/Cx BE, %Premium to BE. Therefore, economic advantage could favor PM and SS if sold on commodity grass market.
- Implications
 - Proceed with caution, not enough data for conclusive analysis yet, will keep updated as database is added to.



Questions



www.StelzLab.org

