

## Why is efficiency so important to the beef industry?

**"Efficiency impacts unit cost of production, thereby having the potential to increase beef's competitiveness in both the domestic and global marketplace, to improve industry profitability, and to enhance long-term sustainability of the industry."**

(Ritchie, 2001)

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## Why is efficiency so important to the beef industry?

**"Efficiency can lower costs, and/or increase returns, leading to better use of resources and increased profitability."**

(Hammett, 2009)

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### Impact of a 10% reduction in feed intake

In Wt.	Out Wt.	Lb. Gain	ADG	DOF	RFI	Reduced Feed Intake	Feed Cost Savings	% of Fed Mix	Feed Cost Savings
Calf Feds									
600	1250	650	3.5	186	0.0	0	-		
600	1250	650	3.5	186	-2.0	-371	\$31.57	34	\$426,214,286
Yearling Feds									
775	1300	525	4.0	131	0.0	0	-		
775	1300	525	4.0	131	-2.0	-263	\$22.31	66	\$584,718,750
<b>Total Savings</b>									<b>\$1,010,933,036</b>
Annual fed slaughter: 27 million; Delivered feed cost: \$250/ton									

(Weaber, 2009)

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## 1991

*The Dave Gust, Sr. Family*

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## Goals

- Produce the best genetics in the beef industry
- Provide customer service in the best way possible

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## Motto

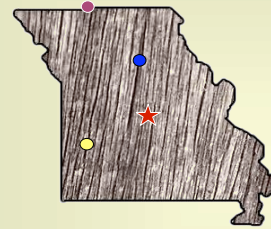


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- ★ Circle A Headquarters (Iberia, MO)
  - Registered operations
  - Commercial operation
  - Bull development
  - Sale location
- Circle A North (Huntsville, MO)
  - Circle A Feeders
  - Feed intake research
  - Commercial operation
- Circle A West (Stockton, MO)
  - Commercial operation
- Circle A Iowa (Lineville, IA)
  - Heifer development

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- 32,000 acres
- 8,000 commercial females
- 700 registered females
- 400 bulls marketed annually
- 600 bred heifers marketed annually
- 5,000 head feeding operation



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## Motto

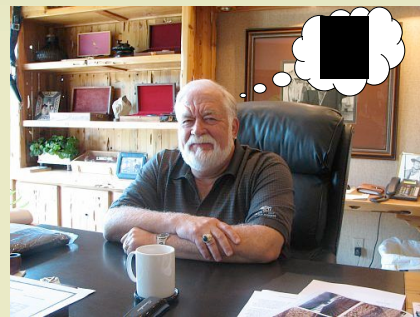


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## 1996



- 51 Angus breeders
- From across the United States



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## 1996



- Objective multi-trait genetic selection
- Profitability based
- Pork and poultry models

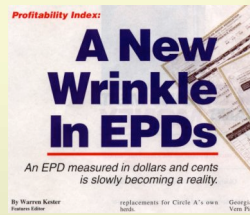
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## 1996



- Test sires based on their offspring, for all traits impacting ranch profitability
- Utilize traits that map directly to cost and return variables
- Utilize real-world, commercial cattle operations and management
- Utilize results for genetic improvement



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## 1997



Begin collecting carcass and ultrasound data for Sire Alliance



Now the largest contributor of carcass data to American Angus Assn.

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## 1998



- Feed efficiency became an obvious omission
- 1998 – constructed Huntsville research facility
- Immediately began testing steers for daily feed consumption
- Incorporated into selection index
- Significant impact on sire rankings and genetic evaluation



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## Circle A Feeders



- GrowSafe
- Individual Feed take
  - 200 head

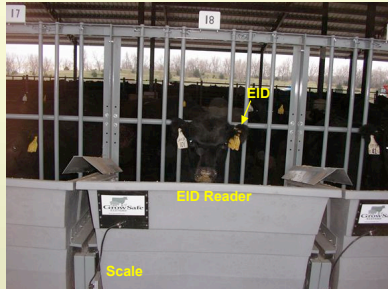


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## Circle A Feeders

- GrowSafe



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## EPDs Calculated

- Birth Weight
- Weaning Weight
- Weaning Weight Maternal
- Post-weaning Average Daily Gain
- Marbling Score
- Yield Grade
- Dry Matter Intake

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## Profitability Index

- Best method for making multi-trait genetic improvement  
(Hazel, 1943)
- Requires breeding values and relative economic values (REV) – marginal change in expected profit per progeny from increasing a particular trait by one unit  
(Herring, 2003)

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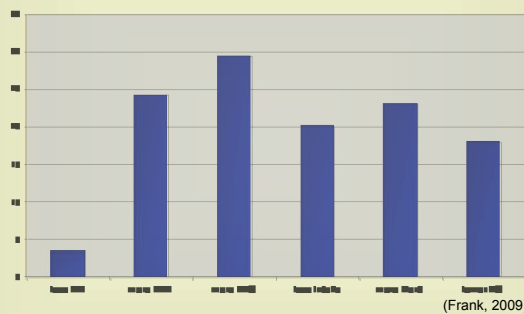
## Relative Economic Values

- Obtained by using SIMULATE 3.0  
(MacNeil et al., 1994)
- 76 production and economic variables included
- Standardized to remove scalar affects

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Marketing Economics Worksheet  
(updated 2002 table)



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## 2003

ABS Global : Beef



Pasture to Plate™  
Genetics

- ABS marketing alliance
- Added to EPD analysis
  - Heifer Pregnancy
  - Cow Stayability
  - Maternal Profit Index

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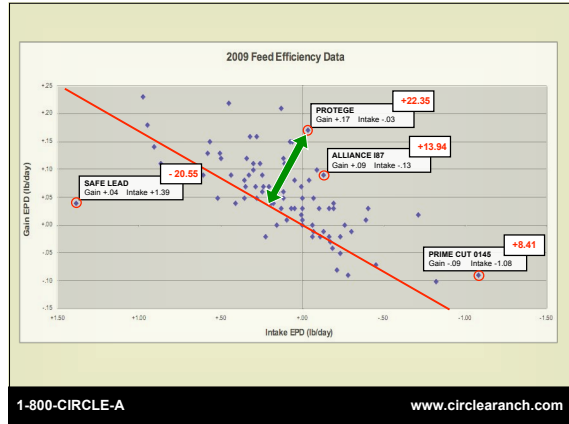
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	Feed Efficiency Index	Feed Efficiency %/rank	ADG EPD (lb/day)	ADG %/rank	Intake EPD (lb/day)	Intake %/rank
1	\$24.52	Top 1%	+21	Top 1%	+11	Top 1%
2	\$22.35	Top 1%	+17	Top 1%	-	Top 1%
3	\$19.89	Top 1%	+22	Top 1%	-	Top 1%
4 MAJOR DESIGN	\$18.12	Top 1%	+15	Top 3%	+05	Top 1%
5 DAYBREAK	\$15.34	Top 2%	+16	Top 2%	+28	Top 2%
6 POUNDMAKER	\$14.48	Top 2%	+10	Top 2%	-00	Top 25%
7	\$13.94	Top 2%	+09	Top 1%	-13	Top 2%
8	\$13.17	Top 2%	+12	Top 1%	-	Top 1%
9	\$12.07	Top 2%	+11	Top 1%	-	Top 1%
10 PREFERENCE	\$11.39	Top 4%	+23	Top 1%	+08	Top 1%
11 EXCEED	\$10.99	Top 5%	+08	Top 20%	-04	Top 30%
12 SHEAR FORCE	\$9.10	Top 10%	+12	Top 10%	+34	Top 10%
13	\$8.70	Top 10%	+15	Top 10%	-	Top 10%
14	\$8.64	Top 10%	-	-	-19	Top 10%
15	\$8.49	Top 10%	-	-	-30	Top 10%
16 PRIME CUT 0145	\$8.41	Top 15%	-09	Top 1%	-1.08	Top 1%
17 INNOVATOR	\$7.36	Top 15%	+03	Top 1%	-	Top 1%
18 EXTRA K205	\$7.28	Top 20%	+10	Top 10%	+30	Top 10%
19 MAINLINE	\$7.25	Top 20%	+13	Top 5%	+51	Top 5%
20 ANALYST	\$6.92	Top 20%	+09	Top 15%	+25	Top 15%
21 NEW STANDARD	\$6.80	Top 20%	+03	Top 1%	-16	Top 15%
22 NEW DESIGN 458N	\$6.15	Top 25%	+12	Top 10%	+50	Top 10%
23 GRAHAM 52170	\$5.69	Top 25%	+03	Top 1%	-10	Top 20%
24 OBJECTIVE	\$5.44	Top 30%	+09	Top 15%	+33	Top 15%
25 RITO PRIME	\$4.92	Top 30%	+06	Top 30%	+15	Top 30%



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## 29AN1677 PROTEGE

- ✓ **Number One for Profitability**
- ✓ The newest Sire Alliance winner raising the bar by almost \$10 to \$95.67 for Total Profit Index
- ✓ Ranks in the top 1% for progeny proven efficiency with a +22.35 efficiency index based on +.17 ADG and -.03 Intake EPDs
- ✓ Backed by a tremendous cow family with excellent production records along with added fleshing ability and udder quality
- ✓ Ranks in the top 1% for both \$W and \$B

Sire: RITO 112 OF 2536 RITO I    MGS: D H D TRAVELER 6807

Angus Sire Alliance	EPD	Rank
Shear Force	+20	Top 99%
Intake	-03	Top 1%
ADG	+17	Top 1%
Feed Efficiency	+22.35	Top 1%
Total Profit	\$ 95.67	Top 1%

Trail	CE	BW	WW	YW	SC	CEM	MILK	uOa	HP	MW	MH	DOC
EPD	+7	+1.4	+40	+107	+02	-88	+5	+24		+40	+5.2	
uOa												

CW	MARB	RFA	FAT	uOa	uOa	uOa	uOa	uOa	uOa	uOa	uOa	uOa
+22	+0.70	+31	-001									

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## Sire Alliance Impact

First Angus EPDs for:

Feed Intake  
Heifer Pregnancy  
Cow Stayability  
Tenderness

- Resulting in the most accurate profitability indexes in beef cattle production

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## Sire Alliance Impact

- Huge commercial cowherd database

Cow Herd Backed By:

- 113,000 Birth and weaning weights
- 19,000 Carcass and ultrasound records
- 16,000 Heifer AI records
- 10,000 Cow stayability records
- 2,000 Warner-Bratzler shears
- 1,500 Individual feed intake records

- Identification of elite cows
  - Profitable
  - Dependable
  - Highly adapted to commercial conditions

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## Circle A Premium Bull

- Dam in top 5% of 8,000 females for profitability indexes
- Bred for growth and power
- Bred for superior carcass quality
- Bred for commercial functionality

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## Circle A Feeders

- 5000 head
- 2800' X 120'
- 7.5 acres

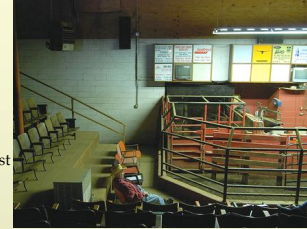


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## Traditional Marketing

- No Guarantees
  - Years worth of work
  - Buyers
  - Recognition of genetic value
  - Recognition of added value
- Buyers Goal
  - Buy the best cattle at the lowest price



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## Circle A Feeders

- Pens 100' X 40'
- 100 head pens
- Concrete underneath
- Bedded on sawdust
- Center cattle ally
- Outside fenceline bunks
- Center exhaust fans
- North side curtain in winter



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## Circle A Feeders

- Guaranteed top of regional market
  - From previous week's MO Market Summary
- \$25 per head for our of Circle A bull
- \$10 per head for out of Circle A female
- \$10 per head for age and source verification
- Plus no commission

Improved feed efficiency is an aspect of our genetic component that has allowed us to decrease our risks and share rewards with Circle A customers.

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## Important Points

- **Various ways to measure feed efficiency**
  - Feed conversion (or its inverse, feed efficiency) the units of feed consumed divided by the units of animal gain over a specific time period
  - Ex: "My cattle converted at 6.2."
    - That's 6.2 pounds of dry matter per pound of gain

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## Good conversion doesn't mean more profitable

Example of cattle with feed conversion of 5.5 lb dry matter intake per lb of gain but differing growth and intake rates

Growth rate	ADG, lbs/d <sup>-1</sup>	Daily DM Intake, lbs/d <sup>-1</sup>
High	4.0	22.0
Medium	3.0	16.5
Low	2.0	11.0

(Herring, 2002)

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## Important Points

- **Various ways to measure feed efficiency**
  - Residual Feed Intake (RFI) – uses a regression equation including an animal's growth rate and body weight to determine the amount of feed the animal would be expected to consume. RFI is the difference between the animal's actual and predicted consumption. (Koch et al., 1963)
  - Animals with a lower RFI consumed less feed than predicted.
  - Best single measurement, however, not used in Circle A selection index because we use both feed intake and post-weaning gain as separate variables with independent REV assigned to each

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## Challenges

- **Expensive to collect progeny data**
  - Bull tests becoming more prevalent
    - Good for screening
    - Limited information for creating higher accuracy breeding values

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## Opportunity

- **More feed efficiency work being done through genetic tests**
  - Suits perfectly for traits that are difficult and expensive to measure
  - May overlook bulls with great feed efficiency, but lacking specific markers in test
    - Progeny tests still final step until a very large part of the variation for any trait can be accounted for

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## Benefits to Improvement

- **Largest benefit to feeding industry**
  - Specifically the owners of fed cattle
- **For commercial cattlemen**
  - Better retained ownership opportunity
  - Foresee paying more for calves out of genetics with proven feed efficiency
  - Link between improved feedyard efficiency and heifer-mates on grass

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## Circle A Results of Profitability Indexes

- **Increased fertility, increased stocking rates and breeding in lower BCS while maintaining pregnancy rates**
- **Improved feed conversion and gain**
  - 5.5 conversion, 3.5 ADG on high co-product
- **Improved carcass and meat quality**
  - HCW 771, REA 12.8, BF .51, YG 2.7, 98% CH & PR
  - 40%+ CAB

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## Advice for Commercial Cattlemen

- **Know what drives your bottom line now and in the future and buy from genetic suppliers who are actively and aggressively pursuing genetic improvement in those areas.**

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Thank you

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