

Analysis of US Cow-Calf Producer Survey Data to Assess Knowledge, Awareness and Attitudes Related to Genetic Improvement of Feed Efficiency


Dr. Bob Weaber

R.L. Weaber¹, H.C. Freethy², D.J. Garrick³, S.L. Hansen⁵, K.A. Johnson¹, M.S. Kerley¹, D.D. Loy⁶, E. Marques⁷, H.L. Neibergs⁸, E.J. Pollak¹, R.D. Schnabel¹, C.M. Seabury⁹, D.W. Shike¹, M.L. Spangler¹⁰ and J.F. Taylor¹

¹Kansas State University, ²University of Illinois-Urbana, ³USDA, ARS, US Meat Animal Research Center, ⁴Iowa State University, ⁵Massey University, Palmerston North, New Zealand, ⁶Washington State University, ⁷University of Missouri, ⁸GeneSeek a Neogen Company, ⁹Texas A&M University, ¹⁰University of Nebraska-Lincoln.

Importance of Feed Efficiency

- Feed costs = 66% in calf feeding systems
- Feed costs = 77% in yearling finishing systems
Anderson *et al.* 2005
- 10% improvement in gain = +18% profit
- 10% improvement in efficiency = +43% profit
Fox *et al.* 2001
- Efficiency increases have 7-8 times the economic impact of comparable increases in gain
Okine *et al.* 2004




Value of Improved Efficiency in Feedlot Sector

Table 1. Estimated cost savings to the US beef cattle industry from selection for a 2 lb reduction in residual feed intake.

In Wt.	Out Wt.	Lb. Gain	ADG	Days on Feed	RFI	Reduced Feed Intake (lb)	Feed Cost Savings \$/hd	% of Fed Mix	Total Feed Cost Savings
Calf Feds									
600	1250	650	3.5	186	0.0	0			
600	1250	650	3.5	186	-2.0	-372	(\$4.72)	34	\$ 502,620,656
Yearling Feds									
775	1300	525	4.0	131	0.0	0			
775	1300	525	4.0	131	-2.0	-262	(\$8.67)	66	\$ 689,539,820
Total Savings: \$ 1,192,160,476									

Annual fed slaughter cattle: 27 million head; Delivered feed cost: \$ 294.62 as fed
Weaber, 2011



National Program for the Genetic Improvement of Feed Efficiency in Beef Cattle



20 Investigators
10 Institutions


Stakeholder Survey

- Objectives
 - Develop understanding of stakeholder attitudes and behaviors related to:
 - Importance of feed efficiency
 - Feed efficiency metrics
 - Methods of genetic improvement
 - Base line for determination of project impact
 - Guide extension program development deployment

Stakeholder Survey



- Stakeholder sampling
 - USDA-NASS Producer sample (~7,500)
 - Cow-calf (National)
 - Feedyard (13 state region used for Cattle on Feed)
 - Mailed September 18, 2013; non-respondents received second copy October 23, 2013
- Paper survey-55 questions
 - Survey instrument reviewed and granted exemption (45 CFR §46.101, paragraph b, category: 2, subsection: ii) by K-State IRB
- Dataset returned December 2, 2013
 - Return rate: 11.6%



Stakeholder Survey


- ◆ Regions
- ◆ Strata--Herd Size

7	5,001 +	Beef Cows
6	2,501 - 5,000	Beef Cows
5	1,001 - 2,500	Beef Cows
4	501 - 1,000	Beef Cows
3	251 - 500	Beef Cows
2	101 - 250	Beef Cows
1	100 and below	Beef Cows


Stakeholder Survey Statistical Analysis

- ◆ Weighted frequencies and standard errors estimated using PROC SURVEYFREQ in SAS
- ◆ Means and standard errors estimated using PROC SURVEYMEANS in SAS
- ◆ Stratified sample design
- ◆ Frequencies weighted to account for unequal probability of inclusion in the sample





Stakeholder Survey Results

- ◆ Analysis focused on commercial cow-calf producers (n=269)
 - 93% Owners
 - 5.1% Managers
 - 1.8% Other
- ◆ Mean age 57.4 ± 1.9 y
- ◆ Mean experience 33.2 ± 1.6 y
- ◆ Farm/ranch cattle inventories of respondents
 - 83.1 ± 6.7 hd
- ◆ 3.7% use of Artificial Insemination
- ◆ Mean bull price US\$ 1,887 ± 102




Stakeholder Survey Results

- ◆ Respondent level of education
 - 38.3% 4 y college graduates
 - 23.3% some college
 - 27.3% high school graduates
 - 5.0% less than high school grad
 - 6.3% no response
- ◆ Farm/ranch work as % of time
 - 47.3% indicated greater than half-time
- ◆ Farm/ranch income as % of family income
 - 29.9 ± 2.2%


Stakeholder Survey Results

- ◆ Sources of breeding/genetics information
 - 38.9% unpaid consultant
 - 29.7% veterinarians
 - 29.5% extension professionals
 - 27.7% seedstock producers
 - 18.9% internet search
 - 18.1% farm supply/feed store
 - 14.7% breed association personnel
- ◆ 11.7% AI stud personnel
- ◆ 9.3% popular press
- ◆ 2.1% paid consultants
- ◆ *Important to educate traditional trainers; but also direct communication to commercial and seedstock*



Stakeholder Survey Results

- ◆ Decision making process in their business
 - 73.8% profitability greatest concern
 - 24.2% early adopters of new technologies
 - 77.0% let ideas prove themselves before adoption
 - 87.0% current management/selection sustainable
 - 55.4% access new knowledge from media/program
 - 40.1% rely on extension educators to teach new techniques
 - 39.8% rely on seedstock/breed associations for new info on breeding/selection practices



Stakeholder Survey Results

- Feed Efficiency Concepts
 - 32.5% correctly identified definition of F/G
 - 36.2% correctly identified definition of feed efficiency
 - 16.4% had heard of RFI
 - 14.3% familiar of RADG
 - 54.8% identified rate of gain as method used by industry historically to improve FE
 - 40.6% improved diet formulation
 - 28.4% feed additives
- (ionophore/beta-agonist)
 - 35.2% implants
 - 24.2% didn't know if any of the options were used
 - ~50% of respondents didn't know of any negative consequence to cowherd due to selection for ADG; 13.4% no harmful effects; 10.3% correctly answered



Stakeholder Survey Results

- Feed Efficiency Concepts
 - 41.2% not knowledgeable of methods to select for improved efficiency
 - 28.8% slightly knowledgeable
 - 20.2% somewhat knowledgeable
 - 7.0% very knowledgeable
 - 1.5% extremely knowledgeable



Stakeholder Survey Results

- Largest obstacle to genetic improvement of FE in beef industry
 - 11.9% lack of available facilities/equip
 - 9.7% lack of uniform guidelines
 - 8.3% no obstacles
 - 8.0% lack of demand for tested bulls
 - 7.1% too expensive to collect ind. FI records
- ~10% were aware of this project



Stakeholder Survey Results

Frequency of use (SE) for various types of genetic prediction information used by beef producers during past five years and their anticipated future use.¹

Data type	Use past 5 years ²	Anticipated future use ²
Actual measurements	18.4 (3.0)	6.7 (1.8)
Ratios	21.6 (4.0)	13.8 (3.3)
Expected Progeny Differences	29.9 (4.4)	12.4 (3.4)
Genomically Enhanced EPD	5.6 (2.2)	12.6 (3.0)
Productivity of relatives	16.4 (3.5)	14.3 (3.7)
Comments by seller	17.6 (3.8)	11.4 (3.0)
DNA marker results	2.8 (1.5)	15.4 (3.1)
None of above	31.0 (4.9)	42.5 (5.1)

¹Respondents could select more than one type of information used; column totals will not sum to 100%.

²Percentage of respondents indicating use or anticipated use followed by standard error of measurement.



Stakeholder Survey Results

- Genetic Improvement Concepts
 - Gauge knowledge of and understanding of basic genetics/selection concepts and attitudes
 - Asked to identify current and anticipated selection behaviors



Stakeholder Survey Results

- Producers lack basic understanding of new genomic based selection tools and anticipated benefits
 - 62% didn't know what class of traits would benefit from marker assisted selection
 - 13.1% correct (difficult/expensive; sig. costs/returns)
 - >2/3 didn't know value of including genomics in NCE
 - 20.8% correctly ID'd increase in acc.
 - 70% didn't know how much genetic variation accounted for by current DNA markers



Stakeholder Survey Results

- ♦ Genetic Improvement Concepts
 - 41.7% ADG as selection criteria to improve FE
 - 27% cow mature weight and body condition score
 - <4% ME EPD
 - <4% Residual Average Daily Gain (rADG)
 - <4% selection index that use FI predictions



Stakeholder Survey Results

- ♦ Willingness to pay for bulls with reliable FE genetic predictions
 - 23% would not pay more
 - 10.5% increase price US\$ 101–200
 - 11.8% increase price US\$ 201–300
 - 13.6% pay > US\$ 500



Stakeholder Survey Conclusions

- ♦ Cow-calf producers not well versed in either feed efficiency or genetic/selection concepts.
- ♦ More work to be done to educate trainers and producers on both topics
- ♦ No direct price signal in value chain, although significant cost saving/value improvement through improvement
- ♦ Value of demonstration project; surveyed participants to quantify knowledge gain/attitudes



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 - www.beefefficiency.org



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www.beefefficiency.org

Thank you!

Questions?

