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Cow Feed Efficiency Unknowns, Including Utilization of Range Forages

Douglas Olsen
Olsen Ranches, Inc.

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Cow Feed Efficiency Unknowns, Including Utilization of Range Forages

Douglas Olsen
Olsen Ranches, Inc.

Range Beef Cow Symposium
November 17, 18, and 19, 2015
Loveland, CO
Why Test for Efficiency?

- Bob Weaber (2011) estimated that a 10% improvement across the entire feedlot industry would reduce feed cost $1.2 billion in 2011
- A 1% improvement in feed efficiency has the same economic impact as a 3% increase in rate of gain
- Feed cost are large portion of beef production
  - Feedlot
  - Backgrounding
  - Cow/Calf

Cow Efficiency

Importance of Cow Feed Efficiency

- 70% of feed resource for the cow herd
- 70% of feed resource for maintenance
- 50% of all feed is used to maintain the cow herd
Doubts of Feed Efficiency Testing
- Environmental Effects
  - Confined space versus rangeland
  - Pen mate competition
- Growth curve
- Age and hormone effects
- Grazing versus bunk feeding
- Diet
  - Forage versus concentrate
  - Fill regulated or energy feedback
- Gain versus maintenance
- Gain versus milk

Efficiency
- Input divided by output (or vice versa)
  - Example is Feed / Gain

Cow Efficiency
- A cow must convert the forage resource she is given to a high value calf.

What is an efficient cow?

Cow Efficiency (output)
- Must grow enough early to get pregnant early for her first calf
- Low rates of dystocia
- Rebreed annually for multiple years
- Produce pounds of a marketable calf
  - Minimal sickness
  - Efficient growing calf
  - High quality beef product at harvest
Cow Efficiency (input)

- Forage resource
  - Grass
  - Winter grazing
  - Harvested feed

Cow Efficiency

- Thus Cow efficiency is a whole life cycle

\[ A + B + C + D + E + F + G + H \]
\[ X + Y + Z \]

INDEX

Genetics

- AHA National Reference Sire Program
  - Over 200 sires tested
  - Over 10,400 progeny with data
- Olsen Steers tested in GrowSafe facility
  - 71 sires
  - 1777 steer progeny

Genetics

- Actual Data from June 14, 2012 to August 25, 2012 test (72 day)
- AI sired steers out of 4 year old or older cows
- 13 sires
- 209 steers

Genetics

- ADG 5.02 lb/day
- In value of $1.45 /lb
- Out value of $1.35 /lb
- Feed Cost $283.02 /DM ton

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<th>Sire</th>
<th>In Weight</th>
<th>In Value @ $1.45/lb</th>
<th>ADG</th>
<th>Out Weight</th>
<th>Out Value @ $1.35/lb</th>
<th>Feed Cost @ $283.02/DM ton</th>
<th>Value Change</th>
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• Similar Beginning Weight
• Large difference in ADG
• Extra gain offset the extra feed cost

Genetics

- Moderate to High heritability for change
  - Phenotype
  - Marker Assisted
- Marker Base estimates of heritability
  - Four populations of beef cattle
  - 847 Hereford cattle in 10 contemporary groups
  - Population specific

Marker-base estimates of heritability ($h^2$) for ADG, DMI, MMWT and RFI

<table>
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<tr>
<th>Breed</th>
<th>DMI (lb)</th>
<th>MMWT (lb,75)</th>
<th>ADG (lb/d)</th>
<th>RFI (lb/d)</th>
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Saatchi et al.: QTLs associated with dry matter intake, metabolic mid-test weight, growth and feed efficiency have little overlap across 4 beef cattle studies. BMC Genomics 2014 15:1004

Grain Versus Forage

2015 Range Beef Cow Symposium, Loveland, Colo.
Douglas Olsen, Olsen Ranches Inc., Cow Efficiency

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Management Efficiency

- Match genetics to your goals and resources
- More Growth equals?
  - Breed trends versus Feedlot or Commercial cow/calf performance
- More Milk equals?
  - Weaning rate
  - Breed trends
- More Muscle equals?

Opportunity

- Genomic research
  - Health as it relates to efficiency
  - Genomic abnormalities and embryonic death
  - Weaning rate
- Continued testing of phenotypes
- Better data sets to compare cow lifetime productivity

So What?

- Room for improvement in production efficiency and specifically feed efficiency
- Careful evaluation of growth, muscle, and milk in the cow herd
- Improve digestion, metabolism, or health
- Selection for feed efficiency does not appear to have negative effects on cow fertility and weaning rates
Summary

- Visual appraisal can not determine feed efficiency
- More feed intake data is needed
- Better evaluation of correlations to other traits with bigger data sets
- Index to combine traits

www.beefefficiency.org

National Program for Genetic Improvement of Feed Efficiency in Beef Cattle

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