Cow Maintenance Energy Requirements

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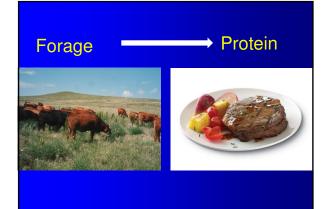
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Discussion Questions

- Which traits do you associate with costs on your ranch (or the ranches of your bull buyers)?
- How much emphasis do you place on selecting for cost-type traits?
- What additional measures do you wish you had to measure cost of production or improve profitability?

Discussion Questions

- Do you use selection indexes or decision support tools? Do you provide this information to your bull buyers?
  - If you don't use these tools, what is the main reason?
  - Do you feel like you are drinking water through a fire hose with the current list of selection tools and EPDs?
- Are we applying sufficient research resources, as an industry, to develop the infrastructure to prototype, adopt, and deploy new traits?

Forage → Protein

Profitable

Sustainable

Match Biological Type with Production Environment

Protein Competitors

Cow Maintenance

- Grow
- Produce a calf
- Re-breed
- Milk
- Survive
- Low cost

Why a Maintenance EPD?

Cow Maintenance

- 70% of feed inputs are used for maintenance energy requirements

- 40 to 60% of cow cost is feed

NRC (1996), McGrann (1999), Hughes (1999)

Cow Maintenance

- Early discussions focused on an EPD for Mature Weight

- Mature Weight would be easier to develop

- Was Mature Wt. the best way to address the selection for lower cost cows?

Cow Maintenance

- What is the economically relevant trait?
- Does a mature weight EPD cleanly separate cost and revenue?
  – Cull cow salvage value vs cow cost

- Decision to produce a cow maintenance EPD using existing data
  – Easier to determine the impact on profit
  – Works well with economically relevant trait principles

Cow Maintenance

- Differences among breeds for maintenance energy requirements
- Increased maintenance requirements for higher milking breeds (Ferrell and Jenkins, 1985)

Maintenance Energy EPD

Maintenance Energy EPD

– Maintenance energy genetic prediction
– Traits include Mature Wt. Milk, and Body Condition Score.

$$MEm = MEm(MWT) + 0.10(MEp)$$

Maintenance Energy EPD

- Economically relevant trait
  – Mature Cow Maintenance Energy Requirement

- Available indicator traits
  – Mature Weight
  – Milk (Maternal Weaning Weight)

Benefits of Maintenance Energy EPD

- Select animals with lower feed costs
- Lower annual cost of production
- Improve selection of animals for production environment

Benefits of Maintenance Energy EPD

- Straight forward value estimation
- Insurance against poor feed conditions

Benefits of Maintenance Energy EPD

Adds to the short (but growing) list of cost type traits

Maintenance Energy EPD

	Sires	Non Parents
	EPD (Mcal/mo)	EPD (Mcal/mo)
Average	4	4
Range	-19 to 23	-17 to 23

Maintenance Energy EPD-- Example

Sire A EPD =   0 Mcal/mo

Sire B EPD = 20 Mcal/mo (23 lbs dry matter)

Outcome

Daughters from sire B would require 20 Mcal/mo more energy for maintenance requirements than daughters from Sire A

Maintenance Energy Data collection

- Analysis needs data on mature weight at different ages, body condition score, and weaning weight-milk information
- Mature weight and body condition score should be recorded at the same time.

New Sources of Data & Traits

- Candidate indicator traits
  - Correlated growth traits (Weaning wt, selective reporting)
  - Visceral organs (liver, heart, etc)
  - Cell level indicators (Mitochondria / proton leak)
  - DNA Markers
  - Heart rate
  - Develop other epd to characterize energy consumption on the cow side (growth, repro, rebreeding, etc.)

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Discussion Questions

- If you had a choice of any trait that represented cow cost, what would it describe? Where do we need to make improvements?