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Efficiency in the Range Beef Cow

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Efficiency in the Range Beef Cow

Biological Versus Economic Efficiency
- Profitable cattle are usually productive
- Productive cattle are not always profitable

Biological Type and Biological Efficiency

Economic Efficiency of Beef Production

Summary of 1984 Beef Cow Efficiency Forum
- Liberal Feed and/or Low Stress
  - Heavier-milking, larger cattle are more efficient
- Restricted Feed or Higher Stress
  - Moderate-milking, moderate size are more efficient

Cow Efficiency
- Stocking Rate and Grazing Management
  - Run more moderate than large cows?
- Longevity in a production setting important
- Cows produce second calf at 3 years? (Zietsman, 2014)
Key Metrics
- Pregnancy Rate
  - Two-year pregnancy rate
  - Cows bred early vs late
- Cost/weaned calf
- Carrying Capacity
- Customer Feedback

The Frustration?
- Complex Systems
  - Genetics
  - Management
  - Environment
  - Costs
  - Marketing

Net Present Value of Cows

Capital Budgeting: NPV

Effect of Longevity on NPV
(5-yr avg prices; weigh-up cow marketing)

Cost of Bred Heifers
NPV vs Lifetime Profit

<table>
<thead>
<tr>
<th>Cost to Put Heifer in Herd</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,000</td>
<td>$821/hd</td>
</tr>
<tr>
<td>$1,500</td>
<td>$321/hd</td>
</tr>
<tr>
<td>$2,000</td>
<td>-$179/hd</td>
</tr>
</tbody>
</table>

Can we build a better cow?

Range Development

- Heifers developed on range or in a dry lot; All to grass May 18
  - Similar winter gains
- Gain from turnout to breeding (May 18 to June 14)
  - Range: 2.07 lb/day
  - Dry lot: 0.32 lb/day

(P < 0.05)

Salverson et al., 2005

ADG from AI to Pregnancy Detection for Heifers on Range or Dry Lot Prior to Breeding

P < 0.01

Perry et al., 2013

Pregnancy to AI for Heifers on Range or Dry Lot Prior to Breeding

Range: 59.43%
Drylot: 43.19%

(P = 0.04)

Perry et al., 2013

Range Development at Padlock

- 2011
  - 500 hd range developed
    - 3 lbs of cake
    - No hay
    - 771 lbs at breeding in July
    - 60.9% first service conception
  - 1000 hd in feedlot
    - 39 NEg grower
    - 879 lbs at breeding in July
    - 61.6% first service conception
Range Development at Padlock

- 2012
  - 1000 hd range developed
  - 2 lbs of cake
  - No Hay
  - 645 lbs at breeding in July
  - 64.5% first service conception
- 1600 hd feedlot developed
  - 913 lbs at breeding in July
  - 60.7% first service conception

Fort Keogh Research

- Cows managed with marginal or adequate supplementation during the winter (8 yrs)
- Progeny heavier at 5 yrs of age from dams on marginal vs adequate nutrition
  - BCS was better on marginal progeny

Roberts et al., 2011

Effect of Protein Supplementation on Subsequent Heifer Performance

<table>
<thead>
<tr>
<th>Item</th>
<th>No Winter Protein</th>
<th>Winter Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adj. 205-d wt, lb</td>
<td>481&lt;sup&gt;a&lt;/sup&gt;</td>
<td>498&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Age at Puberty</td>
<td>334</td>
<td>339</td>
</tr>
<tr>
<td>Pregnant %</td>
<td>80&lt;sup&gt;a&lt;/sup&gt;</td>
<td>93&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

P < 0.05

Martin et al., 2007

Cow Efficiency

- Reproduction is a driver in cow efficiency
- Improved reproduction in young cows improves longevity
- Young cow pregnancy may be influenced by management of the cow and the heifer calf

Looking Ahead

- Learned Grazing Behavior
- Systems of Cow Management
- Fetal Programming
Look Deeper

- Cause and Effect are distant in time and space

- The areas of highest leverage may not be the most obvious!

Senge, 1990

Thank You!