The Importance of Longevity

Economics of cow age in today’s beef industry

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The Beef producer

- Older (average age 58)
- Frugal
  - Qualification – out pocket expenses
- Cynical/skeptical
- Critical of and reluctant to change
- Spell out all costs in real numbers!

Why are cows culled?

- Reproductive failure is the #1 reason cows leave the herd
  - First calf heifers are the greatest reproductive challenge!

- NAHMS Beef 2007-2008 –
  Q6. Of the (Item 3e) cows sold for purposes other than breeding (culls), how many were sold primarily because of:
Reasons for culling cows

Current Drought Recommendations

- Massive herd reductions:
  - Compensate for high feed costs
  - No feed availability
- Alternative management plans?
  - No heifer retention
  - Tighten up calving season

Lazy L Calving Distribution Sample Herd Numbers

Herd Size Distribution

- 5-100 Head: 12%
- 101-200 Head: 10%
- 201-500 Head: 2%
- 501-1000 Head: 0%
- Over 1000 Head: 11.6%

Herd Size

Cull Cows

Massive herd reductions:

- Compensate for high feed costs
- No feed availability

Alternative management plans?

- No heifer retention
- Tighten up calving season

Lazy L Calving Distribution Sample Herd Numbers

<table>
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<tr>
<th>Herd Size</th>
<th>Brings</th>
<th>Calves</th>
<th>Cows</th>
<th>Heifers</th>
<th>Bulls</th>
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Cost of Weaning

- 83% of replacement heifers are home-raised (NAHMS Beef 2007-2008)
- No up front purchase price, but there is a substantial cost!
- Cost of Retention and Development
  - Opportunity cost as feeder calf: $1.40/lb for 600 lb calf – $840

Running Balance: -$840

Cost of Development

- Feed costs for development:
  - Heifer should be 65% of mature weight at breeding
    - Assuming mature weight of 1,400 lbs
  - 600 lb weaning weight (Nov) to 910 lb breeding weight (June)
  - 310 lbs of gain over 200 days – ADG of 1.6 lbs/day

Example development ration (as fed)

- Grass Hay – 12 lbs
- Dried Distillers’ Grains – 3 lbs
- Corn Screenings – 3 lbs
- Vit/Mineral supplement – 0.19 lbs
Cost of development

- Value of feedstuffs over 200 day development period
  - Grass Hay: 1.2 ton ($190/ton)
  - Dried Distillers' Grains: 600 lbs ($250/ton)
  - Corn Screenings: 600 lbs ($215/ton)
  - Vit/Mineral Supplement: 38 lbs ($30/hd)
  - Misc costs (vaccinations, medications, pen loss, etc)
- Total cost for heifer development: $500/hd
- Opportunity cost as feeder calf: $840

Running Balance: -$1340

Cost Of Bred Heifer

- Cost of breeding: *$100/hd
  - Synchronization & AI
    - Therapies/Doc: $0-$18
    - Semen: $10-
      hundreds
  - bull costs/hd: $75/hd
- Summer pasture** (6 months): $164/hd
  - Pasture maintenance - $60/ac/yr
  - Brad heifer - 0.6 AU
- Feed cost during second winter (5 months): $400
  - Hay (4000 lb/400 lb/day) - 8 tons
  - Corn Screenings - #100 lbs
  - Vitamin/mineral supplement - 1 lb
- Cost of summer pasture**
  (2nd year): $2380/ac
  - Pasture maintenance - $128/ac/yr
  - Cow/calf pair - 1.2 AU

*Carrying Capacity = 1
AU/acre
Cost of Bred heifer

- Total cost to first weaning
  - Opportunity cost on a related heifer - $340
  - Cost of development - $500
  - Breeding expenses - $300
  - Cost of 1st summer pasture - $164
  - Cost of 2nd summer pasture - $400
  - Cost of 2nd winter - $400
  - Total cost - $2,200

- Revenue generated from sale of first calf

Cow Amortization Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Balance</th>
<th>Feed/Breeding costs</th>
<th>Calf value</th>
<th>New Balance</th>
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Return on Investment

Assumptions:
- Heifer develop: $500
- Cow costs: $616/yr
- 1st Sale: 500 lbs @ $1.50/lb
- 2nd Sale: 550 lbs @ $1.50/lb
When is she a profit maker?

- After she weans calf #6, 7, or 8?
- If annual cow costs are less than average
- If weaned offspring are worth more than feeder calf prices
  - Marketing of replacement heifers and bulls
- Market value as a cull cow

Return on Investment

![Cumulative Profit Graph](image)

Assumptions:
- Heifer develop: $368
- Cow costs: $450/yr
- Sale 550 lb @ $1.50/lb

![Cumulative Profit Chart](image)

How long is she a profit maker?

- Age (value) at sale
- Lifetime number of calves weaned
  - Abortion
  - Preweaning mortality
- Performance of weaned calves
  - Older cows will bring home a smaller calf
    - Structural soundness problems
    - Teat and udder problems
    - Bad teeth/no teeth
  - Cow costs: $450/yr
Proportion Remaining in Herd: n = 16,469 (1980 to 2000)  

**Day 1 to 21**  
**Day 22 to 42**  
**> Day 42**  

P < 0.01

**Time of 1st calving and retention in herd**

Years of Age

Heifer development Hurdles

- HACCP Approach
  - Hazard Analysis – Females leaving the herd prematurely
  - Critical Control Points
    - Selection
    - Groceries
    - Breeding
    - Gestation
    - Calving
    - Rebreeding

**Time of 1st calving and calf weights**

Weaning Weight, lbs.

* P < 0.05

1 to 21  
22 to 42  
43 and after
**Heifer Selection and development**

- Biggest, oldest heifers
- Heifers born early in the calving season will most likely have attained puberty before the breeding season
- Keep more heifers than needed
  - Heifers that do not conceive early can be marketed
- Create a development program appropriate for the individual beef operation
  - Determine resources (feed, finances)
  - Establish producer expectations

**Heifer Breeding and Gestation**

- Breed heifers 2-4 weeks before cows
  - Allows more time for first calf heifers to resume cyclicity
- Use known calving ease sires
- Manage heifers separately from the cowherd for as long as possible
- Manage nutrition during gestation to address heifer issues
  - Body condition of heifer at calving
  - Birth weight of calf

**Heifer calving and Rebreeding**

- Monitor heifers closely before and during calving
  - NAHMS 2007-2008
- Address dystocia early and appropriately to maximize calf survival and minimize stress on heifer
  - Educate! Educate! Educate!
- Nutrition, Nutrition, Nutrition
  - Manage first calf heifers separately from the cowherd for as long as possible
Other considerations

- Structural soundness
  - Cows with bad feet don’t last long
- Animal type must fit the environment
  - Small vs large frame, deep ribbed vs shallow bodied, etc
- Maximize maternal traits
  - Select for highly fertile females
  - Utilize heterosis!

Maternal Heterosis:
Advantage of the Crossbred Cow

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<tr>
<th>Trait</th>
<th>Units</th>
<th>%</th>
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<tr>
<td>Calving rate, %</td>
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<td>Survival to weaning, %</td>
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<td>Birth weight, lb</td>
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<td>Weaning weight, lb</td>
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<td>Longevity, yr</td>
<td>1.16</td>
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Cows Lifetime Production

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<tr>
<th>Trait</th>
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<tr>
<td># Calves</td>
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<td>Cumulative weaning wt, lb</td>
<td>600</td>
<td>25.3</td>
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</table>

Adapted from Cundiff & Gregory, 1992

Questions/Discussion

- Thank You!
References

• DiCostanzo, A. 2012. Feed costs for developing heifers. Personal communication University of Minnesota College of Food, Agricultural, and Natural Resource Sciences.