Heifer development

Andy Roberts  andy.roberts@ars.usda.gov  406-874-8216

Fort Keogh
55,000 Acres  Southeast Montana
Avg Precip. 12.4 inches
~1200 to 1500 mother cows
Goals for heifer development?

- Get as many bred as possible
- Target weight or condition
- Cost
- Lifetime production efficiency

Production Efficiency

**Input:** Feed (cost & amount)  
Replacement Rate

**Output:** Lifetime productivity
# Nutrition and Reproduction

<table>
<thead>
<tr>
<th>Plane of Nutrition</th>
<th>Reproduce?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heifers/Cows</td>
<td></td>
</tr>
<tr>
<td>Recommended</td>
<td>Yes 90% No 10%</td>
</tr>
<tr>
<td>Reduced</td>
<td>Yes 85% No 15%</td>
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</tbody>
</table>

| Heifer Development/Winter Feeding | 5% ? |

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## Feed inputs and Reproduction

1. Variation in Reproductive response to nutrition
2. Lifetime production VS Annual production cycle
3. Stable Composite Gene Combination

CGC: 1/2 Red Angus, 1/4 Charolais, 1/4 Tarentaise 4/20/2006
Dec 2001: CGC Composites split into 2 winter management groups

“**Adequate**” supplement

- 4 lbs alfalfa/d
- 100% hay if necessary (22 lbs/d)
- Dec - March

“**Marginal**” supplement

- 2.4 lbs alfalfa/d
- 80% hay, if necessary (18 lb/d)
- March - April

**Pregnancy rates in cows**

**Adequate**
- 90.4 %
- 962 hd

**Marginal**
- 88.9 %
- 1117 hd
Calan gate individual feeding system

Dec – April, 140 days

Fed as Control or 20% Restricted

Fort Keogh Heifer Development study

- Restricted n = 656
- Control n = 655

26% less feed

1.4 lb/d

1.1 lb/d

1.05 lb/d

1.19 lb/d

54% MBW

57%

89%

88% Preg

$30

52 day breeding

8% Restriction

Heifers born 2002-2011
Open vs. Pregnant heifers

- Born 4 days later (36 vs 47 % in 1st 21 d)
- BW 2 lbs heavier
- After wean: Eat less and grow slower (lighter, less fat, smaller REA)
- 17 & 43 lbs lighter at breeding & preg test, but no difference in hip ht.

Similar characteristics to open 2yr olds

Any desirable traits on open heifers?

YEAR biggest factor in almost everything measured!

Keep it flexible

Shorten breeding season?
Level of harvested feed input and production

**COW**
- Adequate
- Marginal

**Daughter**
- Control
- Restricted

Fetal Programming

- Control heavier than restricted
- Cows from marginal dams are heavier
Critical ?

Control > Restrict
Marg > Adeq

* P < 0.07 Cow X Dam

Level of harvested feed input and production

<table>
<thead>
<tr>
<th>Dam treatment</th>
<th>Cow treatment</th>
<th>Calf birth wt</th>
<th>Calf wean wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate</td>
<td>Control</td>
<td>77</td>
<td>449</td>
</tr>
<tr>
<td>Marginal</td>
<td>Control</td>
<td>77</td>
<td>442</td>
</tr>
<tr>
<td>Adequate</td>
<td>Restricted</td>
<td>77</td>
<td>444</td>
</tr>
<tr>
<td>Marginal</td>
<td>Restricted</td>
<td>74</td>
<td>431</td>
</tr>
</tbody>
</table>

Fetal Programming ??????
How we feed our cows this winter can affect how their offspring responds to nutritional limitations.
Heifer development on range vs. feedlot (2012-2017)

**Feedlot**: wean into feedlot, develop in lots

**Range**: fenceline wean, develop on range with 4 lbs cake/d (Range+Cake) or with self-fed protein supplement in GrowSafe bunks (Range+Protein)

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**Fence line weaning**
### Feedlot vs Range Development 2013 Born Heifers

<table>
<thead>
<tr>
<th></th>
<th>Cost/hd/5 months</th>
<th>% Preg</th>
<th>% Preg 40 d</th>
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</thead>
<tbody>
<tr>
<td>Feedlot</td>
<td>$167</td>
<td>92</td>
<td>85</td>
</tr>
<tr>
<td>Feedlot on pasture</td>
<td>$130</td>
<td>91</td>
<td>86</td>
</tr>
<tr>
<td>Range+Cake</td>
<td>$95</td>
<td>93</td>
<td>88</td>
</tr>
<tr>
<td>Range+Protein</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **ADG**
  - Range: 1.62
  - Feedlot: 1.90
  - Feedlot on pasture: 1.92

- **HAY, lbs**
  - Grass: 12.2, 6.4, 8.4, 8.4
  - Alfalfa: 10.4

- **March 5, Change pastures, stop hay**

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- **January**
- **March**
- **April**
Feedlot vs Range Development 2014 Born Heifers

ADG
- Feedlot: 1.52
- Feedlot on pasture: 1.70
- Range+Cake: 1.45

% Preg in 46d
- 87
- 83
- 75