Objective:

Leave with at least one piece of information that will help you help your clients to improve herd reproductive efficiency.

Goals

90-95% pregnancy rate in 65 days
65:88:100
% born 21:42:65 days

Benefits

↓ Labor
↑ Marketing opportunities
↑ Herd health
Should ↑ herd income

Not in EVERY environment!

NAHMS Data 2007 - 2008

• Good (?) News – 91.5% of exposed cows calved
• Bad News – 34% of herds had NO defined calving season
• 49.6% of herds calved over MORE than 3 months

Reproductive concerns tend to be ‘an accumulation of errors’

Brad White, DVM, MS
Heifers - Selection

Want 12-15 year commitment
Low h²
Goals:
Highly fertile
Low maintenance
Moderate frame, weight, milk
Avoid single trait selection (e.g., extreme RFI)
(Some herds should not keep heifers)

Heifers - Economics

Want optimums
The law of diminishing marginal returns states that “in all productive processes, adding more of one factor of production, while holding all others constant, will at some point yield lower per-unit returns”. (Wikipedia)
Ex: milk, growth, low BW

Heifer development systems: Dry-lot feeding compared with grazing dormant winter forage

Three year study with 299 heifers:
~150 days graze(EXT)/60 DL
~184 days DL
R. N. Funston and D. M. Larson
J ANIM SCI May 2011 89:1595-1602

<table>
<thead>
<tr>
<th>Trait</th>
<th>DL</th>
<th>EXT</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial weaned value, $/heifer</td>
<td>625</td>
<td>624</td>
<td>—</td>
</tr>
<tr>
<td>Winter feed cost, $/heifer</td>
<td>93</td>
<td>60</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Spring feed cost, $/heifer</td>
<td>56</td>
<td>47</td>
<td>0.43</td>
</tr>
<tr>
<td>Summer feed cost, $/heifer</td>
<td>88</td>
<td>88</td>
<td>0.82</td>
</tr>
<tr>
<td>Total feeding cost, $/heifer</td>
<td>237</td>
<td>195</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Total development cost, $/heifer</td>
<td>982</td>
<td>941</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Cull heifer value, $/heifer exposed</td>
<td>53</td>
<td>77</td>
<td>0.55</td>
</tr>
<tr>
<td>Net cost of 1 pregnant heifer, $</td>
<td>985</td>
<td>940</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>
It matters NOT how they get to 53-65% of mature body weight

Don't Let the Feedlot Dictate the Genetics of Your Cow Herd

• Feeder have little concern about CC profitability (but cc owner should have concern about theirs)
• They want to produce a Prime, Yield Grade 1, CAB, grass fed, all-natural, organic animal that is local
• Have cows that fit your environment and make you $$$, low-maintenance and fertility tops
• Buy bulls to produce high value calves
A late calving heifer becomes:

- a late calving cow
- an open cow

Which option is good you’re the client’s beef business?

Priority of energy use by the Cow

1. Basal metabolism
2. Physical activities – including grazing
3. Growth
4. Supporting basic energy reserves
5. Maintaining an existing pregnancy
6. Milk production
7. Adding to energy reserves
8. Estrous cycling and initiating pregnancy
9. Storing excess energy

Energy requirements during the last month of gestation in cow

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>Growth</th>
<th>Pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heifers</td>
<td>Cows</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.77</td>
<td>0</td>
<td>0.84</td>
</tr>
<tr>
<td>7.23</td>
<td>5.37</td>
<td>0.57</td>
</tr>
<tr>
<td>12</td>
<td>16</td>
<td>12</td>
</tr>
</tbody>
</table>

Type of Pregnancy

Body Condition Score (BCS) at calving is the single most important factor in rebreeding success.

<table>
<thead>
<tr>
<th>BCS 4</th>
<th>BCS 5</th>
<th>BCS 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>744</td>
<td>825</td>
<td>933</td>
</tr>
<tr>
<td>64</td>
<td>67</td>
<td>71</td>
</tr>
<tr>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>42</td>
<td>54</td>
<td>63</td>
</tr>
<tr>
<td>56</td>
<td>80</td>
<td>98</td>
</tr>
<tr>
<td>74</td>
<td>90</td>
<td>98</td>
</tr>
</tbody>
</table>

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<td>90</td>
</tr>
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<td>56</td>
<td>80</td>
<td>98</td>
</tr>
</tbody>
</table>

Body Condition Score (BCS) and Reproductive Performance of First-Calf Heifers

Should high milk EPD heifers be in BCS 7 at calving?

Average Angus EPD for milk

<table>
<thead>
<tr>
<th>Year</th>
<th>EPD</th>
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<tbody>
<tr>
<td>1986</td>
<td>+2</td>
</tr>
<tr>
<td>2014</td>
<td>+24 (+~1#/yr)</td>
</tr>
</tbody>
</table>

Similar increases in most other breeds


How to add BCS

- Wean calves before weather stress
- Cow gains weight for 2-3 months postweaning
- Nearly impossible to add weight during weather stress

<table>
<thead>
<tr>
<th>BCS</th>
<th>Preg Rate %</th>
<th>Calving Interval, d</th>
<th>Wean Age, d</th>
<th>Calf ADG</th>
<th>Calf WW</th>
<th>Calf Value, $/100</th>
<th>Gross Income</th>
<th>Cow Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>43</td>
<td>414</td>
<td>190</td>
<td>1.60</td>
<td>374</td>
<td>123</td>
<td>$448</td>
<td>$185</td>
</tr>
<tr>
<td>4</td>
<td>61</td>
<td>381</td>
<td>223</td>
<td>1.75</td>
<td>460</td>
<td>116</td>
<td>$552</td>
<td>$310</td>
</tr>
<tr>
<td>5</td>
<td>86</td>
<td>364</td>
<td>240</td>
<td>1.85</td>
<td>514</td>
<td>109</td>
<td>$596</td>
<td>$471</td>
</tr>
<tr>
<td>6</td>
<td>93</td>
<td>364</td>
<td>240</td>
<td>1.85</td>
<td>514</td>
<td>109</td>
<td>$596</td>
<td>$510</td>
</tr>
</tbody>
</table>

*Adapted from Kunkle et al., 1998 UF/IFAS Publication SP-144

Body Condition Score: scale of 1 (thin) to 9 (obese)

Pregnancy rates averaged across trials in Texas, Oklahoma, and Florida when BCS was assessed at calving, breeding, and pregnancy testing.

Weaning Age; 240 days for cows in BCS of 5 and 6 and decreases as calving intervals increase.

Average Daily Gain

Adjusted Weaning Weight; calculated as calf age times calf gain plus birth weight (70 lb).

Average price for similar weight calves during December of 2010.

Calculated as calf weight times calf price.

Calculated as income/calf times pregnancy times 0.92 (% calves raised of those pregnant).

Dystocia and Nutrition - Energy

Nine trials with high energy rations precalving
- Birth weight - slight ↑ 8/9
- Dystocia - ND 7/9
- Wean weight - ↑ 2/4

Dystocia and Nutrition - Protein

Five trials with high protein rations precalving
- Birth weight - slight ↑ 2/5
- Dystocia - ↑ 1/5, ↓ 1/5, ND 3/5
- Wean weight - ↑ 1/2

Dystocia and Nutrition Energy and Protein

Summary – increased nutrition up to BCS 6 or 7 has little to no effect on dystocia

Micronutrient Nutrition

Inconsistent results studying copper, selenium, manganese, Vitamin A and Vitamin E

Canadian work with 771 cows in 39 herds a significant (p<0.001) association between serum copper concentrations and pregnancy status in cows < 10 years of age. Cu < 0.40 ppm.

Remedies for an Extended Calving Season

• Keep significantly more heifers than the normal 8-20% replacement rate
• Select, develop and breed heifers as outlined earlier
• Cut 30-60 days off the breeding season each year until the herd is at the desired calving season. Sell all open cows.
• Buy bred females that fit the environment and sell open/late calving cows
• Divide herd into “spring” and “fall” calving herds if weather will permit

Bulls

EVERY bull gets a BSE before EVERY season
$19.52 benefit to cost ratio with 10% improvement in fertility, 500# steers at $182.50/cwt and $75 for BSE.

Bull Power

• 1 cow per month of age of the bull for 65 day breeding season
  • 28 month old bull can service 28 cows
• Crossbred, hybrid, composite bulls have improved fertility
• Bull exposure 20-30 days before breeding season will induce earlier estrus

Additional Reproductive Aids

• Reproductive tract scoring
• Reduced Suckling
• Ionophores
• Induction of Estrus with Hormones

Summary

• Goal of 90-95% pregnant 65 days (if fits environment)
• Select and develop the ‘right’ heifers
• Have females in adequate BCS at calving — reproduction is a luxury
  • Heifers 6 (?) – 6.5 – 7 (?)
  • Cows 5.5 (?) – 6
• Feed an ionophore
• Crossbred cows always
• Breed heifers early and for reduced time
• Remember optimum, not maximum — some need to fail
• BSE ALL bulls and have enough ‘power’