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Using Partial Confinement Systems for Beef Cattle Production

Karla Jenkins

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Using Partial Confinement Systems for Beef Cattle Production

Karla H. Jenkins
Cow/Calf, Range Management Specialist

Why would we ever consider confining production cows?

Availability of Grass Reduced

- Chronic Drought Conditions
- More crop production acres
- Urbanization
- Increased value of grass

Availability of Grass Reduced

- Increased Value of Grass
  - Rethinking the utilization of grass
    - High quality grass for gain
    - Residues for maintenance

Confinement Feeding Cows

Research vs. Production

- First two years research study was total confinement
- Studied all phases of the production cycle in confinement
- Last year and this year research is a systems approach
- Every producer has a unique system and therefore must determine what will work best for any given operation

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Thinking Outside the Box

Thinking Outside the Box

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Limit Feeding Confinement Cows

- Energy dense by products can be mixed with low quality crop residues
- Dry matter intake can be limited
- Cow condition can be maintained because nutrient needs are being met

Key Concepts for Limit Feeding Cows in Confinement
Knowing the Nutrient Content of Feedstuffs

<table>
<thead>
<tr>
<th>Ingredient¹</th>
<th>TDN (%DM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn distillers grains (wet, dry, modified) and solubles</td>
<td>108</td>
</tr>
<tr>
<td>Sugar beet pulp</td>
<td>90</td>
</tr>
<tr>
<td>Soyhulls</td>
<td>70</td>
</tr>
<tr>
<td>Synergy</td>
<td>105</td>
</tr>
<tr>
<td>Corn gluten feed</td>
<td>100</td>
</tr>
<tr>
<td>Midds</td>
<td>75</td>
</tr>
<tr>
<td>Corn</td>
<td>83</td>
</tr>
<tr>
<td>Wheat straw/corn stalks</td>
<td>43</td>
</tr>
<tr>
<td>Meadow Hay</td>
<td>57</td>
</tr>
</tbody>
</table>

¹Feeding trials reported in NE Beef Report 1987, p.4; '88 p. 34; '93, p. 46; midds data from KSU Research Report

Understanding Nutrient Requirements

Accounting for the Dry Matter Intake of the Calf

<table>
<thead>
<tr>
<th>Diet (DM ratio)</th>
<th>Ingredients</th>
<th>Late Gestation Cow</th>
<th>Lactating Cow</th>
<th>Cow with 60 d old calf</th>
</tr>
</thead>
<tbody>
<tr>
<td>57:43</td>
<td>Distillers grains: straw</td>
<td>15.0</td>
<td>18.0</td>
<td>20.0</td>
</tr>
<tr>
<td>30:70</td>
<td>Distillers grains: straw</td>
<td>19.2</td>
<td>23.0</td>
<td>25.6</td>
</tr>
<tr>
<td>40:20:40</td>
<td>Distillers grains: straw: silage</td>
<td>15.4</td>
<td>18.5</td>
<td>20.6</td>
</tr>
<tr>
<td>20:35:45</td>
<td>Distillers grains: straw: beet pulp</td>
<td>14.6</td>
<td>17.5</td>
<td>19.4</td>
</tr>
</tbody>
</table>

Dry matter intake, lb
Limit Feeding Lactating Cows in Confinement

Year 1
- Lactation diet after 90 days (DM basis)
- 60% Wet Distillers
- 40% Straw/stalks
- Early weaned cows 15 lb DM
- Late weaned pairs 22 lb DM

Year 2
- Lactation diet after 90 days (DM basis)
- 40% Wet Distillers
- 20% Straw/stalks
- 40% Corn silage
- Early weaned cows 15.5 lb DM
- Late weaned pairs 24.9 lb DM

Daily DMI By Weaning Treatment

Performance of cows by location and weaning treatment. Yr 1 & 2

Performance calves by location and weaning treatment. Year 1 & 2
Energy Savings vs Management Tool

- Similar performance at equal intake suggests early weaning did not result in feed energy savings but may allow more flexible management options

<table>
<thead>
<tr>
<th>Impact of Early Weaning on Pregnancy Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
</tr>
<tr>
<td>EW</td>
</tr>
<tr>
<td>% Pregnant</td>
</tr>
<tr>
<td>$P &gt; 0.88$</td>
</tr>
</tbody>
</table>

Calf Health in Confinement

- Modified Sandhills Calving System
- Calves with 2 week age difference not allowed in the same pen
- No co-mingling of calf ages until after the youngest calves were over 4 weeks old

Calf Health Issues

- Minimal Health Issues prior to early weaning
- Shade is important for summer calves
- Exposure to temperature changes, newly arrived feeder calves, and decreased passive immunity caused respiratory challenge at both locations in different years

Considerations for Breeding in Confinement

- Cows may be close to handling facilities
  - Incorporating synchronization and AI
- Bulls need 15-18 lb TDN and another 2 ft. of bunk space

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Our Experience
- Calves learned to eat with their mothers
- Learned what the feed truck was

Management Considerations
- Water
  - Calves learned to drink from trough within a few days of age.
  - No cases of calves dehydrating during summer.
- Bunk space
  - 2 ft/hd (adult cattle) & 1-1.5 ft/hd (calves).
- Pen space
  - 350 – 400 ft²/hd.

Confinement Feeding outside the Feedlot
- Limit feeding on pasture
  - Cattle will continue to consume forage if allowed
  - Pastures could continue to suffer overgrazing
  - Use winter feeding ground, crop ground, pivot corners

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Supplement fed to cow-calf pairs on cornstalks\(^1\,^2\).

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dried distillers grains plus solubles</td>
<td>94.51</td>
</tr>
<tr>
<td>Limestone</td>
<td>3.56</td>
</tr>
<tr>
<td>Pelleting binder</td>
<td>1.88</td>
</tr>
<tr>
<td>Vitamin A,D,E</td>
<td>0.11</td>
</tr>
</tbody>
</table>

\(^1\) All values presented on a DM basis.
\(^2\) Fed at 3.2 lb per pair per day (DM).

Cow BW by location and wintering treatment, lb.

<table>
<thead>
<tr>
<th>Item</th>
<th>ARDC</th>
<th>PREC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>1222</td>
<td>1217</td>
</tr>
<tr>
<td>DL</td>
<td>1257</td>
<td>1247</td>
</tr>
<tr>
<td>Ending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>1125</td>
<td>1339</td>
</tr>
<tr>
<td>DL</td>
<td>1271</td>
<td>1307</td>
</tr>
</tbody>
</table>

ARDC

Initial
SEM = 80
P = 0.83

Ending
SEM = 64
P = 0.03

PREC

Initial
SEM = 137
P = 0.69

Ending
SEM = 146
P = 0.34

Calf BW by location and wintering treatment, lb.

<table>
<thead>
<tr>
<th>Item</th>
<th>ARDC</th>
<th>PREC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>319</td>
<td>320</td>
</tr>
<tr>
<td>DL</td>
<td>306</td>
<td>312</td>
</tr>
<tr>
<td>Ending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>558</td>
<td>672</td>
</tr>
<tr>
<td>DL</td>
<td>525</td>
<td>512</td>
</tr>
</tbody>
</table>

ARDC

Initial
SEM = 9
P = 0.00

Ending
SEM = 19
P = 0.02

PREC

Initial
SEM = 22
P = 0.27

Ending
SEM = 46
P = 0.57

Calf ADG, lb

ARDC

SEM = 0.09
P < 0.01

PREC

SEM = 0.18
P = 0.50

Cow Pregnancy Rate, %

ARDC CS | ARDC DL | PHREC CS | PHREC DL

90     | 100*    | 93       | 100

Base Analysis Prices | $/ton
Grass  5/4  | 1.37
Cornstalks 5/4  | 0.94
Distillers 5/2 DM | 0.02
Hay 5/2 DM | 0.01
Stalk/Straw 5/2 DM | 0.01
Mineral 5/4 | 0.10
Salt 5/4 | 0.10

Base price of 114/220 at 40% DM + $5 for delivery.
Base price of 58/10 at 40% DM + $5 for delivery.
Base price of 58/10 at 40% DM + $5 for delivery.

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**Summary**

- Energy density is the key to limit feeding
- Lactation increases energy needs considerably
- Consider early weaning options
- Confined calves must be able to reach water and feed
- Limit fed cows need ample bunk space and a consistent feeding routine

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**Summary Cont.**

- Each producer needs to evaluate their resources and system options to see what might work best
- As prices change systems should be re-evaluated

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**Table**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>DSL Grass/Grain</th>
<th>DSL Stalks/Grain</th>
<th>Confinement/Grain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grazing Grass if</td>
<td>300.60</td>
<td>299.05</td>
<td>0.00</td>
</tr>
<tr>
<td>Grazing Stalks if</td>
<td>294.70</td>
<td>136.10</td>
<td>135.78</td>
</tr>
<tr>
<td>Hay Bales</td>
<td>154.00</td>
<td>77.32</td>
<td>0.00</td>
</tr>
<tr>
<td>Baled Stalks/Grain</td>
<td>0.00</td>
<td>27.80</td>
<td>175.00</td>
</tr>
<tr>
<td>DGS Bales</td>
<td>298.30</td>
<td>22.12</td>
<td>253.12</td>
</tr>
<tr>
<td>DGS if</td>
<td>410.10</td>
<td>215.20</td>
<td>282.08</td>
</tr>
<tr>
<td>Supplement if</td>
<td>106.00</td>
<td>16.00</td>
<td>310.00</td>
</tr>
<tr>
<td>Labor if</td>
<td>270.00</td>
<td>480.00</td>
<td>480.00</td>
</tr>
<tr>
<td>Cow cost</td>
<td>250.00</td>
<td>250.00</td>
<td>250.00</td>
</tr>
<tr>
<td>Total Cost per Cow</td>
<td>914.50</td>
<td>914.50</td>
<td>914.50</td>
</tr>
<tr>
<td>UCOP at 100% weaned/exposed</td>
<td>1.510</td>
<td>1.510</td>
<td>1.510</td>
</tr>
<tr>
<td>UCOP at 50% weaned/exposed</td>
<td>1.550</td>
<td>1.550</td>
<td>1.550</td>
</tr>
</tbody>
</table>

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**Contact Information**

kjenkins2@unl.edu
(308) 632-1245
beef.unl.edu