2013 Georgia Grazing School:
Segregating herds based on animal class and nutritional need.

**Segregating herds based on animal class and nutritional need**

Lawton Stewart
Grazing School
August 7, 2013

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**Developing a Feeding Strategy**

1. Understand your production system
   - Fall Calving
   - Spring Calving
   - Continuous
2. Understand your forage system
   - Pasture
   - Conserved forage
3. Develop an economical supplement

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**Reproductive Efficiency**

• The most important factor affecting profitability
• Highly dependent on proper nutrition

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**Nutrient Priorities**

1. Maintenance
2. Growth (Heifers)
3. Lactation
4. Reproduction

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**Brood Cow Nutrient Requirements**
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Separate Cows Based on Stage of Production

Body Condition Scoring???
- 1-9 – Assess the energy reserve status of a cow.

Body Condition Scoring???

When to BCS?

Kunkle et al., 1998

Nutrients needed to increase BCS over a 70 day period*

<table>
<thead>
<tr>
<th>BCS</th>
<th>1100</th>
<th>1200</th>
<th>1300</th>
<th>1400</th>
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<tbody>
<tr>
<td>2</td>
<td>5.9</td>
<td>6.4</td>
<td>6.9</td>
<td>7.4</td>
</tr>
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<td>3</td>
<td>6.5</td>
<td>7.1</td>
<td>7.7</td>
<td>8.2</td>
</tr>
<tr>
<td>4</td>
<td>7.3</td>
<td>8.0</td>
<td>8.7</td>
<td>9.3</td>
</tr>
<tr>
<td>5</td>
<td>8.3</td>
<td>9.0</td>
<td>9.8</td>
<td>10.5</td>
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<td>9.6</td>
<td>10.4</td>
<td>11.3</td>
<td>12.2</td>
</tr>
<tr>
<td>7</td>
<td>11.1</td>
<td>12.2</td>
<td>13.2</td>
<td>14.2</td>
</tr>
</tbody>
</table>

* Nutrients need to move up to the given BCS

What does that mean???
A 1200 lb cow at weaning is a BCS 4
- How much more TDN does she need to get to a BCS 5 in 70 days?
- What would the total TDN requirement be?
- What would the requirement be post calving?

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What about her?
A 1200 lb cow at weaning is a BCS 6

- Can we utilize her energy reserve if forage is limited? **YES**
- Mobilized fat is worth 80% of dietary calories.
  - To get to BCS 6 takes an additional 10.4% TDN.
  - To go down from BCS 6 is (10.4 * 80% = 8.3% TDN)
- A diet of 40%TDN (48% requirement for dry cows – 8.3% = ~40%) will carry her 70 days and keep her above a BCS 5.

**Nutritional Requirements of Weaned Calves**

<table>
<thead>
<tr>
<th>Wt (lb)</th>
<th>Daily Gain (lb)</th>
<th>Crude Protein (%)</th>
<th>TDN (%)</th>
</tr>
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<tbody>
<tr>
<td>400</td>
<td>1.5</td>
<td>11.5</td>
<td>63.0</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
<td>12.7</td>
<td>67.5</td>
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<tr>
<td></td>
<td>2.5</td>
<td>14.2</td>
<td>73.5</td>
</tr>
<tr>
<td>600</td>
<td>1.5</td>
<td>9.8</td>
<td>63.0</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
<td>10.5</td>
<td>67.5</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>11.4</td>
<td>73.5</td>
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<tr>
<td>800</td>
<td>1.5</td>
<td>8.8</td>
<td>63.0</td>
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<td>2.0</td>
<td>9.8</td>
<td>67.5</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>9.3</td>
<td>73.5</td>
</tr>
</tbody>
</table>

**Potential Forages**

<table>
<thead>
<tr>
<th>Forage</th>
<th>CP (%)</th>
<th>TDN (%)</th>
<th>Peak Lactation</th>
<th>Late Lactation</th>
<th>Dry Cow</th>
<th>600 lb calf gain, lb/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor Hay</td>
<td>7</td>
<td>48</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>0.5</td>
</tr>
<tr>
<td>Average Hay</td>
<td>10</td>
<td>55</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>1.25</td>
</tr>
<tr>
<td>Good Hay</td>
<td>12</td>
<td>60</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>1.35</td>
</tr>
<tr>
<td>Bermudagrass Pasteure</td>
<td>13</td>
<td>64</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>1.60</td>
</tr>
<tr>
<td>Tall Fescue Pasteure</td>
<td>14</td>
<td>62</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>1.50</td>
</tr>
<tr>
<td>Winter Annuals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.3</td>
</tr>
<tr>
<td>- Vegetative</td>
<td>16</td>
<td>72</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>2.5</td>
</tr>
<tr>
<td>Winter Annuals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td>- Mature</td>
<td>12</td>
<td>58</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>1.3</td>
</tr>
</tbody>
</table>

**Available Forages**

- Grazed Forage?
- Corn Silage
- Drought stressed crops
- Hay produced
  - High quality???
  - Low quality???
- Hay produced
  - Storage
  - Testing
  - Inventory

**Supplementation Strategies**

1. Winter Annuals
2. Commercial Feeds
3. Liquid Feeds/Tubs
4. Byproducts

**Winter annuals**

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**Lick Tanks, Tubs, and Blocks**

**Advantage:**
1. Convenient
2. Reduced Labor
3. Additional minerals and vitamins

**Disadvantage???
1. Intake?
2. Adequate nutrients?
3. Affordable?

**Do they work miracles?**

“They’ll eat the old hay from last year if I use liquid feed”

**Using a Lick Tub for CP**

**Using a Lick Tub for Energy**

**Microbial Crude Protein Production**

**Byproduct Feeding**

- What’s available
- Price
  - Evaluate on DM basis
  - Look at $/nutrient
- Handling / Storage
- Minerals

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**Potential Byproducts**

1. Grain
   - Corn gluten feed
   - Distiller's grains
   - Soy Hulls
   - Wheat middlings

2. Cotton
   - Whole seed
   - Gin trash
   - Hulls

3. Sugar and starch production
   - Cane, beet & corn molasses
   - Salvage candy

4. Vegetable
   - Cull vegetables

**Effect of Increasing Corn on Hay Intake and Digestibility**

<table>
<thead>
<tr>
<th>Corn, lbs/day</th>
<th>Hay DMI lbs</th>
<th>DOMI, lbs</th>
<th>Hay OM Digest, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>19.3</td>
<td>7.5</td>
<td>36.5</td>
</tr>
<tr>
<td>2.2</td>
<td>18.0</td>
<td>8.4</td>
<td>35.1</td>
</tr>
<tr>
<td>4.4</td>
<td>14.1</td>
<td>7.1</td>
<td>23.6</td>
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<tr>
<td>6.6</td>
<td>11.2</td>
<td>7.3</td>
<td>18.9</td>
</tr>
</tbody>
</table>

Oklahoma State, 1987  JAS 65:557

**Effect of Increasing Soybean Hulls on Hay Intake**

<table>
<thead>
<tr>
<th>SH, lbs/day</th>
<th>Hay, OMI, lbs</th>
<th>DOMI, lbs</th>
<th>OM Digestibility, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>21.4</td>
<td>10.6</td>
<td>45.8</td>
</tr>
<tr>
<td>2.2</td>
<td>22.3</td>
<td>11.8</td>
<td>46.2</td>
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<tr>
<td>4.4</td>
<td>21.6</td>
<td>12.3</td>
<td>46.6</td>
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<tr>
<td>6.6</td>
<td>19.9</td>
<td>12.7</td>
<td>48.6</td>
</tr>
</tbody>
</table>

Oklahoma State, 1990  JAS 68:4319

**Byproduct Feeding**

- What's available
- Price
  - Evaluate on DM basis
  - Look at $/nutrient
- Handling / Storage
- Minerals

**Byproduct Pricing**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>$/ton</th>
<th>% DM</th>
<th>% CP</th>
<th>% TDN</th>
<th>$/lb CP</th>
<th>$/lb TDN</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBM 48</td>
<td>$350.00</td>
<td>96</td>
<td>48</td>
<td>87</td>
<td>$0.405</td>
<td>$0.223</td>
</tr>
</tbody>
</table>

$/ton  /  % DM  /  % nutrient  /  2000 lb  =  $/lb of nutrient

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CP Byproduct Price Trends

Energy Byproduct Price Trends

UGA Feed Cost Analyzer

Byproduct Minerals

• Supplement Ca to for proper Ca:P ratio
  – Avoid urinary calculi

• Monitor sulfur levels
  – Avoid polioencephalomalacia
  – Cu deficiency

• N and P excretion
  – Environmental impact

Byproduct Handling/Storage

www.ugabeef.caes.uga.edu/tools

How much do I feed?

Stage of Production/Requirement Poor Forage, 7% CP, 48% TDN Average Forage, 10% CP, 50% TDN Excellent Forage, 13% CP, 56% TDN

Dry Pregnant
7% CP, 48% TDN

Peak Lactation
12% CP, 60% TDN

Late Lactation
9% CP, 55% TDN

-50:50 mix of corn gluten feed and soyhulls

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How do I balance my ration?

Balancer Programs:
- Taurus (UC Davis) $400
  - animalscience.ucdavis.edu/extension/Software/taurus/
- BRANDS (Iowa State Univ.) $200-475
  - http://www.iowabeefcenter.org/software_BRANDS.html

Evaluator Programs:
- Cattle Grower Ration Balancer (Univ. of Arkansas)
  - www.aragriculture.org/livestock/beef/nutrition/spreadsheets/
- OSUNRC2002 (Oklahoma State Univ.)

How do I balance my ration?
“Those are too difficult!”
“I want something for free that will balance basic rations”

Now Available:
UGA Basic Balancer

Program Provides:
- Pre-populated feed library
- Feed cost analyzer
- BASIC ration balancer
- Ration Analyzer

Consult with your county extension agent before feeding!!!!

How much do I feed?

<table>
<thead>
<tr>
<th>Stage of Production/Requirement</th>
<th>Poor Forage, 7% CP, 48% TDN</th>
<th>Average Forage, 10% CP, 50% TDN</th>
<th>Excellent Forage, 13% CP, 56% TDN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Pregnant</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Peak Lactation</td>
<td>15.5</td>
<td>11.5</td>
<td>5.8</td>
</tr>
<tr>
<td>Late Lactation</td>
<td>7.6</td>
<td>5.8</td>
<td>0</td>
</tr>
<tr>
<td>-50:50 mix of corn gluten feed and soyhulls</td>
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<td></td>
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</tr>
</tbody>
</table>

Take Home Message

- Understand changing nutrient needs throughout production cycle.
- Know your forages.
- Use economic strategies when supplementation is needed.

Thank You!

Questions?

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