MANAGEMENT AND FEEDING OF CATTLE DURING THE DROUGHT

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FEEDING AND MANAGEMENT CATTLE

- Determine what you have
  - Cattle
    - Fall calving cows
    - Spring calving cows
  - Feed resources
    - Home raised
      - Hay/stalks
    - Purchased
      - Supplements and hays
    - Nutrient analysis

- Goal is through management and feeding to maintain a viable cow herd in the future
  - This may require hard decisions
FEEDING AND MANAGEMENT CATTLE

• Prioritize cattle for culling
  • Pregnant are maintained and non pregnant are considered for culling
    • First calf cows
  • Sorting cows for culling
    • 1. Age, disposition, condition or terminal age culls
    • 2. Young, old, thin open cows
    • 3. Adequate conditioned, open cows
    • 4. Low producing or short bred cows
    • 5. Young, old, thin pregnant cows
    • 6. Adequate conditioned pregnant cows
FEEDING AND MANAGEMENT CATTLE

Body Condition Score 4

Body Condition Score 5

Body Condition Score 6
FEEDING AND MANAGEMENT CATTLE

• Identify Body Condition Score and group for feeding
  • ≤ Body Condition Score 4
    • Feed them to increase at least one body condition score before the next calving season
  • Body Condition Score 5 and 6
    • Feed them to maintain condition
  • One Condition score is about 60 lbs
    • 60 lbs on a 1000 lb cow is more than 60 lbs on a 1500 lb cow
FEEDING AND MANAGEMENT CATTLE

• Creep feeding
  • Beneficial when performance limited by
    • Forage quality
    • Forage quantity
    • Milk production
  • Range in creep feed conversions
    • 5:1 to 30:1
    • Rule of thumb ~ 10:1

• Early weaning
  • Saves about 7 lbs of dry matter per cow per day
<table>
<thead>
<tr>
<th>Calf weaning age, days</th>
<th>60</th>
<th>90</th>
<th>120</th>
<th>150</th>
<th>180</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Reduction in daily energy needs</td>
<td>37.0</td>
<td>34.7</td>
<td>32.0</td>
<td>29.7</td>
<td>27.5</td>
</tr>
<tr>
<td>Corn grain bushel equivalent</td>
<td>17.0</td>
<td>12.2</td>
<td>8.2</td>
<td>4.9</td>
<td>2.2</td>
</tr>
<tr>
<td>Fescue hay Ton equivalent</td>
<td>0.97</td>
<td>0.70</td>
<td>0.47</td>
<td>0.28</td>
<td>0.12</td>
</tr>
</tbody>
</table>
Addition of Ionophore (Monesin known as Rumensin)
- Reduce hay intake
  - 5 to 10% at the same amount of gain (Tumer et al., 1980; Clanton et al., 1981)
- Oklahoma State University study reported
  - Feeding 200 mg/hd/day resulted in additional ½ lb gain increase in ½ body condition score in 58 day feeding period
- Cost 2 to 3 cents per cow per day
  - Added to a mineral supplement

Limit feeding of hay to reduce wastage and improve efficiency
- Decrease hay wastage by using a bunk
  - When hay is unrolled you can expect a wastage of up to 40%
- Restrict Hay Exposure
## FEEDING AND MANAGEMENT CATTLE

<table>
<thead>
<tr>
<th>Bale Type</th>
<th>With Rack</th>
<th>Without Rack</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 day</td>
<td>7 day</td>
</tr>
<tr>
<td>Small Square Bales</td>
<td>3.9</td>
<td>4.1</td>
</tr>
<tr>
<td>Large Round Bales</td>
<td>4.9</td>
<td>5.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.3*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>43.0*</td>
</tr>
</tbody>
</table>

*These bales were spread or unrolled across pasture

MU Extension Guide Sheet G4570
### Feeder Type

<table>
<thead>
<tr>
<th>Item</th>
<th>Cone</th>
<th>Ring</th>
<th>Trailer</th>
<th>Cradle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily hay waste, lbs/cow</td>
<td>0.88</td>
<td>1.55</td>
<td>3.52</td>
<td>4.18</td>
</tr>
<tr>
<td>Hay Waste, %</td>
<td>3.5</td>
<td>6.1</td>
<td>11.4</td>
<td>14.6</td>
</tr>
</tbody>
</table>

Michigan State University
Burskirk et al., 2003
### FEEDING AND MANAGEMENT CATTLE

#### Limit Feeding Option: Hay Restriction to Dry Mature Pregnant Cows (50 d)

<table>
<thead>
<tr>
<th></th>
<th>4 hr</th>
<th>8 hr</th>
<th>12 hr</th>
<th>24 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hay Intake</td>
<td>18.6</td>
<td>24.4</td>
<td>28.3</td>
<td>29.6</td>
</tr>
<tr>
<td>Weight Change</td>
<td>+49</td>
<td>+65</td>
<td>+59</td>
<td>+59</td>
</tr>
</tbody>
</table>

Moderate quality hay

#### Limit Feeding Option: Hay Restriction to 3 year old Pregnant Cows (50 d)

<table>
<thead>
<tr>
<th></th>
<th>4 hr</th>
<th>8 hr</th>
<th>12 hr</th>
<th>24 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hay intake</td>
<td>17.1</td>
<td>23.8</td>
<td>27.5</td>
<td>30.7</td>
</tr>
<tr>
<td>Weight change</td>
<td>+48</td>
<td>+94</td>
<td>+119</td>
<td>+136</td>
</tr>
</tbody>
</table>

Average quality Hay
FEEDING AND MANAGEMENT CATTLE

• Purchased and raised hays
  • Corn Silage
    • 34% DM 8% CP 65% TDN
    • Ensile for at least 21 days and will reduce nitrate 20% to 50%
    • Want to test for nitrates
  • Corn Stalks Bales
    • 5% CP 59% TDN
    • Stalks high in nitrate while the husks and leaves are low
    • Want to test for nitrate
    • Herbicides and insecticide
  • Corn Stalk grazing
    • Similar to corn stalk bales but grazing allow them to pick the leaves and husks which reduces the nitrate risk
    • Reduced cost of baling
FEEDING AND MANAGEMENT CATTLE

- Purchased and raised hays
  - Soybean grazing/balage/bales
    - CP 15% TDN 52%
    - If you can fence it off and have a water source grazing is a good option
      - Reduced cost of baling
    - May consider balage or baling to maintain leaf matter
      - Leaf matter is important for the nutrient value of the hay
    - Nitrate is not a problem but herbicides and insecticides are a problem
      - Check with spray provider to see if you can feed livestock these feedstuffs
FEEDING AND MANAGEMENT CATTLE

- Purchased and raised hays
  - Sorghum Stover/silage
    - Stover/stalks 5% CP 55% TDN
    - Silage 32% DM 9% CP 59% TDN
  - Check for nitrates and the ensiling process will reduce the nitrates by 20 to 50%
  - Grazing stalks
    - water source and the ability to fence the stalks
    - selective of leaves and less selective of the stalk reduce nitrate risk
    - Reduce cost of baling
  - Check and make sure that herbicides and insecticides have not been added that can cause problems to livestock
FEEDING AND MANAGEMENT CATTLE

- Purchased and raised hays
  - Mixed hay, CRP, Straws
    - CRP 6% CP 48% TDN
    - Mixed grass hays 12% CP 56% TDN
    - Legume grass mix hays 17% CP 57% TDN
    - Fescue hay 10% CP 44% TDN
    - Wheat straw 3% CP 42% TDN
  - Some of these hays marginal on protein and energy will need supplementation given the circumstance
  - Some of these that are marginal on quality you might consider ammoniation
  - If there are a lot of weeds in the hay there could be a possibility for increased nitrates
Ammoniation of low quality hay and stalks
- Not recommended to high nitrate feed stuffs or stalks
- Recommend to ammoniate forages ≤ 6% CP and ≤ 50% TDN
- Ammoniation improves hay nutritive value
  - Increases digestibility
  - Increasing intake
  - Increasing protein content
- Nutrient test prior to ammoniation
Ammoniation of low quality hay or stalks

- Process
  - Ground prep
  - Stack bales 123 or 23
  - Insert tubing
  - Plastic wrap (40’ X 100’) 6 mil to 8 mil
  - Seal up the stack
    - Leave 3 ft of plastic on the edges and cover the edges with 1 ft of dirt
  - Apply 3% on a DM Basis (60 lbs per ton)

- Safety is important
  - Eye protection, rubber gloves, long sleeve shirts, long pants, close toe shoes
  - If there is a spill wash with water
FEEDING AND MANAGEMENT CATTLE

- Ammoniation of low quality hay
  - Cover Time
    - <40 → 8 wks
    - 40 to 60 → 4 to 8 wks
    - 60 to 80 → 2 to 4 wks
    - >80 → 2 wks
  - Feeding
    - Allow it to air out prior to feeding
      - 7 days
## FEEDING AND MANAGEMENT CATTLE

### Energy Feedstuffs

<table>
<thead>
<tr>
<th>Feedstuff</th>
<th>%CP</th>
<th>%TDN</th>
<th>%CP/$</th>
<th>%TDN/$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Com</td>
<td>9.8</td>
<td>88</td>
<td>0.03</td>
<td>0.30</td>
</tr>
<tr>
<td>Wheat</td>
<td>12.4</td>
<td>76</td>
<td>0.04</td>
<td>0.26</td>
</tr>
<tr>
<td>Soyhulls</td>
<td>12.2</td>
<td>80</td>
<td>0.04</td>
<td>0.33</td>
</tr>
<tr>
<td>Wheat Midds</td>
<td>18.4</td>
<td>83</td>
<td>0.07</td>
<td>0.31</td>
</tr>
</tbody>
</table>

### Protein Feedstuffs

<table>
<thead>
<tr>
<th>Feedstuff</th>
<th>%CP</th>
<th>%TDN</th>
<th>%CP/$</th>
<th>%TDN/$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dried Distillers grains solubles</td>
<td>29</td>
<td>88</td>
<td>0.09</td>
<td>0.29</td>
</tr>
<tr>
<td>Com gluten feed</td>
<td>22</td>
<td>80</td>
<td>0.08</td>
<td>0.29</td>
</tr>
<tr>
<td>Soybean meal</td>
<td>54</td>
<td>87</td>
<td>0.08</td>
<td>0.13</td>
</tr>
<tr>
<td>Cottonseed meal</td>
<td>46</td>
<td>75</td>
<td>0.11</td>
<td>0.18</td>
</tr>
</tbody>
</table>

[http://agebb.missouri.edu/dairy/byprod/bpmenu.asp](http://agebb.missouri.edu/dairy/byprod/bpmenu.asp)
## FEEDING AND MANAGEMENT CATTLE

<table>
<thead>
<tr>
<th>Feedstuff</th>
<th>%CP</th>
<th>%TDN</th>
<th>%CP/$</th>
<th>%TDN/$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein Tubes</td>
<td>20</td>
<td>56</td>
<td>0.03</td>
<td>0.08</td>
</tr>
<tr>
<td>QLF</td>
<td>34</td>
<td>47</td>
<td>0.09</td>
<td>0.12</td>
</tr>
<tr>
<td>All natural liquid protein supplement</td>
<td>20</td>
<td>44</td>
<td>0.06</td>
<td>0.13</td>
</tr>
</tbody>
</table>
CACTLE NITRATE TOXICITY

Cause

Nitrate → Nitrite → ammonia → Microbial protein

Accumulation → Conversion of Hemoglobin to Methemoglobin

→ Lack of oxygen carrying capacity from lungs to tissues

Urea and NPN supplements
Nitrate inhibits the action of the enzyme which breaks urea down into ammonia, delaying and leveling rumen ammonia supply
CATTLE NITRATE TOXICITY

• Symptoms
  • Difficult, painful, and rapid breathing
  • Muscle tremors
  • Incoordination
  • Diarrhea
  • Frequent Urination,
  • Dark to chocolate colored blood
  • Abortions
  • Decreased milk production
  • Collapse
  • Death
# CATTLE NITRATE TOXICITY

**Field Crops high in Nitrate**
- Corn
- Sorghum/Milo

**Grasses and Weeds high in nitrate**
- Johnsongrass
- Pearl Millet
- Sudan Grass
- Wild sunflower
- Pigeon grass
- Pigweed
- Kochia
- Thistle
CATTLE NITRATE TOXICITY

• How to deal with high nitrate feeds
  • Test
    • Extension office spot test
    • Send off to have a test done
      • Defined level
      • Feeding instructions based on the level
  • Making silage
    • Could reduce the level of nitrate 20 to 50%
  • Grazing or not baling the stalks
    • Grazing will allow them to be selective of the leaves, husks, and cobs which are low in nitrate
    • The stalk is were the nitrate is being concentrated
# CATTLE NITRATE TOXICITY

## How Much Nitrate is Too Much?

Prepared by Dr. Rob Kallenbach
Forage Production & Management/MU Extension and Department of Plant Sciences

<table>
<thead>
<tr>
<th>NO$_3^-$-N ppm</th>
<th>NO$_3^-$ ppm</th>
<th>Category</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 550</td>
<td>0 to 2,500</td>
<td>SAFE</td>
<td>Forage is generally safe to feed to all classes of livestock.</td>
</tr>
<tr>
<td>550 to 1,100</td>
<td>2,500 to 5,000</td>
<td>CAUTION</td>
<td>Forage with this nitrate (NO$_3^-$) content can cause a problem with pregnant and young animals. Do not feed forage with nitrate levels this high in combination with non-protein nitrogen supplements, and limit forage with NO$_3^-$ levels this high to one-half of total ration.</td>
</tr>
<tr>
<td>1,100 to 3,400</td>
<td>5,000 to 15,000</td>
<td>DANGER TOXIC</td>
<td>Limit forage with this NO$_3^-$ level to one-fourth of total ration. Should supplement forage of this type with energy, minerals and vitamin A.</td>
</tr>
<tr>
<td>More than 3,400</td>
<td>More than 15,000</td>
<td>EXTREMELY TOXIC</td>
<td>Forage with this NO$_3^-$ level or higher is toxic and should not be fed under any circumstance. If forage with this NO$_3^-$ concentration must be fed, it should be mixed with other feed and make up no more than 15 percent of the total ration.</td>
</tr>
</tbody>
</table>
SUMMARY

• Inventory your cattle and get to a critical mass
• Identify nutrient requirements of your cattle
• Implement grazing to reduce cost
• Implement practices to reduce hay wastage
• Identify nitrate level of feedstuffs and feed accordingly
• Consider ways to improve existing forage
• When purchasing your feedstuffs
  • Identify need (energy vs. protein)
  • Economics
QUESTIONS