Alternative Feeds and Feed Additives for Beef Cattle

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North Carolina State University
Don't be afraid to be open to new ideas. Good ones do happen!
Feed additives

- AS-700 (Aureomycin + sulfa)
- Deccox (decoquinate)
- Ionophores
  - Rumensin
  - Bovatec
- Yeast cultures
- Seaweed extracts
- Organic trace minerals
- Other?

We have to use proven technology to improve efficiency when our market will allow it.
Classification of Alternative Feeds

- **Waste materials**
  - Little proven value as feed. Primarily a disposal problem.

- **Waste products**
  - Certain factors greatly limit their usefulness. Broiler litter, cotton waste, potato waste.

- **Byproducts**
  - Great potential. Some factors may limit their use. Underutilized. Soybean hulls, corn gluten feed.

- **Coproducts**
  - Have attained primary ingredient value. Soybean meal, cottonseed meal.

## Nutritional and economic value of alternative feeds given $570/ton Soybean meal and $7.05/bu ($272/ton) Corn

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CP %</th>
<th>TDN %</th>
<th>CP &amp; TDN</th>
<th>TDN Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>14% CP Corn/SBM</td>
<td>16</td>
<td>87</td>
<td>316</td>
<td>272</td>
</tr>
<tr>
<td>Corn Gluten Feed</td>
<td>22</td>
<td>84</td>
<td>353</td>
<td>263</td>
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<tr>
<td>Soybean Hulls</td>
<td>12</td>
<td>80</td>
<td>272</td>
<td>250</td>
</tr>
<tr>
<td>Distillers Grains</td>
<td>28</td>
<td>90</td>
<td>400</td>
<td>276</td>
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<tr>
<td>Whole Cottonseed</td>
<td>22</td>
<td>96</td>
<td>400</td>
<td>331</td>
</tr>
<tr>
<td>Cottonseed Meal</td>
<td>44</td>
<td>77</td>
<td>494</td>
<td>241</td>
</tr>
<tr>
<td>Wet Brewer’s (21% DM)</td>
<td>26</td>
<td>77</td>
<td>85</td>
<td>56</td>
</tr>
<tr>
<td>50:50 SH:CGF Blend</td>
<td>17</td>
<td>82</td>
<td>305</td>
<td>251</td>
</tr>
<tr>
<td>Corn Silage (35% DM)</td>
<td>7</td>
<td>68</td>
<td>81</td>
<td>83</td>
</tr>
</tbody>
</table>
# Current Market Price of Alternative Feeds*

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Price</th>
<th>$Value</th>
<th>% of value</th>
</tr>
</thead>
<tbody>
<tr>
<td>14% CP Corn/SBM</td>
<td>316</td>
<td>316</td>
<td>100</td>
</tr>
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<td>195</td>
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<td>272</td>
<td>87</td>
</tr>
<tr>
<td>Distillers Grains</td>
<td>280</td>
<td>400</td>
<td>70</td>
</tr>
<tr>
<td>Whole Cottonseed</td>
<td>350</td>
<td>400</td>
<td>92</td>
</tr>
<tr>
<td>Cottonseed meal</td>
<td>390</td>
<td>494</td>
<td>79</td>
</tr>
<tr>
<td>Wet Brewer’s (21% DM)</td>
<td>45</td>
<td>85</td>
<td>41</td>
</tr>
<tr>
<td>50:50 SH:CGF Blend</td>
<td>215</td>
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*Delivered to Central Piedmont NC, July 29, 2013*
Current Opportunities

✧ Soyhulls and Corn Gluten Feed are still among the better opportunities
✧ Corn silage may be a good value this year (but make sure you check dry matter %)
✧ “Niche” ingredients are the best deal at the current time
  ✧ Bakery returns/waste
  ✧ Vegetable processing waste
  ✧ Cotton processing waste
  ✧ Brewer’s grains from microbreweries
Strategies for Reducing Feed Cost

- Reduced level of concentrate feeding
- Use of alternative concentrate ingredients
- Alternative feeding strategies
  - Self-feeding
  - Reduced frequency of feeding
- Low intake supplement strategies
- More emphasis on optimizing use of grazed forages and improved forage quality
84 day ADG (lb/d) when 5 cwt steers on free-choice grass hay were fed alternative concentrates at 6 lb/day

SH = Soyhull Pellets
PGF = Corn Gluten Pellets (Loudon)
LGF = Loose Corn Gluten (Winston)
Performance of calves (initially 602 lbs) fed hay only, or supplemented with 6 lb/day, 14 lbs 3X/week or 21 lbs 2X/week of 50:50 blend for 84 days (2 yrs)

7X, 3X and 2X differ from hay only but don't differ from each other
Supplementation Level for Calves Grazing Stockpiled Fescue and fed 50:50 blend

- Experiment was done at the Butner Beef Cattle Field Lab in 2009 and 2010
- Fescue was stockpiled and stripgrazed 56 days
- Supplementation levels were 0.5, 1.0 or 1.5% of BWT
- Heifers were synch. and bred AI followed by cleanup bull
Effect of feeding a 50:50 soyhull:corn gluten feed mix at an increasing rate on heifer average daily gain and body condition score gain over 56 days on stockpiled fescue (initial wt 600 lb, initial BCS 5.2)

Supported by the NC Cattle Industry Assessment
Effect of feeding a 50:50 soyhull:corn gluten feed mix at an increasing rate on heifer initial and final weights

Supported by the NC Cattle Industry Assessment
Effect of feeding a 50:50 soyhull:corn gluten feed mix at an increasing rate on heifer cycling and breeding rate

Supported by the NC Cattle Industry Assessment
What about using a low level self-fed supplement or giving additional forage availability?
Introduction

This study evaluated how allowing a higher residual after grazing and providing supplemental protein tubs influenced pasture utilization, animal gain, and reproductive performance.
Supplement Intake

\[ \text{intake, lb/d} \]

**Legend:**
- NA-Min
- NA-Tub
- EA-Min
- EA-Tub

\[ ^a P < 0.05 \text{ for Tub and Allocation x Tub} \]
Average Daily Gain, lb/d

ADG, lb/d

a P < 0.05 for Allocation
Dry cows eating a byproduct mix out of tire feeders
Cotton gin trash
RPB
Fruit waste
Successful use of Byproducts/Waste Products Takes a High Level of Management Ability and Is Best Suited to Larger Producers
We must address the limitations of our forage base and our forage management.
Is Non-Toxic Infected Fescue a Viable Alternative?

- Endophyte-free fescue has not been successful in the “fescue belt”
- Non-toxic infected fescues are available
  - MaxQ
  - MaxQ2
  - BarOptima
  - Soon there will be others
- Will cattle really perform better?
- Will they be as persistent as toxic fescue?
Performance of heifers grazing fescue varying in endophyte status during winter and spring, Drewnoski et al., 2009

Growth performance of heifers consuming fescue with varying endophyte status

<table>
<thead>
<tr>
<th></th>
<th>Winter</th>
<th>Spring</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>E+</td>
<td>2.2</td>
<td>0.88</td>
<td>0.88</td>
</tr>
<tr>
<td>E-</td>
<td>1.8</td>
<td>1.32</td>
<td>0.44</td>
</tr>
<tr>
<td>EN</td>
<td>1.32</td>
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<td>0.88</td>
</tr>
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Note: Values with different letters are significantly different.
Percent of Endophyte Free, Toxic, or Non-Toxic Fescue in Pastures After Five Years of Grazing Measured Using Two Techniques