Use of Alternative feedstuffs in Cow Calf Operations

Glenn Nader, UCCE Farm Advisor
Yuba/Sutter/Butte Counties
Alternative Feeds

- Buy from broker, mill, or farmer
- Many in the valley area
- Cheaper than corn and hay/nutrient

Problems

- Feeding
- Variation in their nutrient value
- Possible nutrient imbalances
Energy Sources
## Canola Meal vs Other Common Byproduct Feeds (% of DM)

<table>
<thead>
<tr>
<th>Feed</th>
<th>TDN</th>
<th>CP</th>
<th>Price</th>
<th>ADF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canola Meal</td>
<td>75</td>
<td>39</td>
<td>238-255</td>
<td>19</td>
</tr>
<tr>
<td>Rice Bran</td>
<td>76</td>
<td>14</td>
<td>72-80</td>
<td>18</td>
</tr>
<tr>
<td>DDGS</td>
<td>86</td>
<td>23</td>
<td>90-98</td>
<td>17</td>
</tr>
<tr>
<td>Almond Hulls</td>
<td>59-48</td>
<td>2-4.4</td>
<td>90-98</td>
<td>20-36</td>
</tr>
</tbody>
</table>
Canola meal
Canola Meal

- Oil and biodiesel production
- Pellets
Rice Bran

- Brown to white rice - polished
- CP 14%
- TDN 76%
- Phos 1.67%
- $85/ton
- More than 20% - fiber digestion
- Rancid in warm weather
Almond Hulls

- Depends on what is sent – shell, trigs
- CP - 4.2
- TDN - 54
- $115-125/ton
- Electric fence and move each day
Canola Meal

- Trans fat and biodiesel
- Canada double production in next 3 yrs
- Unit trains $70/ton shipping costs
- Pellets
- Feb 17 price $238.50-255.50
- 4-8% dairy rations
Canola Meal vs Other Common Byproduct Feeds (% of DM)

<table>
<thead>
<tr>
<th>Feed</th>
<th>TDN</th>
<th>NE-L</th>
<th>CP</th>
<th>Fat</th>
<th>ADF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canola Meal</td>
<td>75</td>
<td>0.77</td>
<td>39</td>
<td>3.9</td>
<td>19</td>
</tr>
<tr>
<td>Soy 48</td>
<td>87</td>
<td>0.91</td>
<td>55</td>
<td>1.0</td>
<td>6</td>
</tr>
<tr>
<td>DDGS</td>
<td>86</td>
<td>0.90</td>
<td>23</td>
<td>9.8</td>
<td>17</td>
</tr>
<tr>
<td>Soy Hulls</td>
<td>77</td>
<td>0.77</td>
<td>12</td>
<td>2.1</td>
<td>50</td>
</tr>
</tbody>
</table>
Beans

- Whole
- Mold reject for human consumption
- Soak or Ag Bag
- TDN - 87 to 62
- CP – 29 to 6
Pomaces

- **Pear**
  - CP – 6.3%
  - TDN – 76%
  - Moisture depends on plant

- **Prune**
  - CP – 14.6%
  - TDN – 76%
  - Need to feed in bunks within a week or so
Protein Sources
Tomato Pomace

- Dried, wet fly problems
- CP – 23.9% (12 to 24)
- TDN – 73%
- Acidic - no more than 20% of ration
- Available during harvest
Cottonseed

- Limited cotton production
- CP - 24.9%
- TDN - 98%
- Can be fed up to 8 lbs./cow/day
Dried Poultry Litter

- Needs to be composted correctly
- Foster Farms and others
- CP – 19.4%
- TDN – 37%
Roughages
Rice straw

- Lab testing
- Minimum criteria
  - ADF – 50 or lower
  - CP 4.5 or higher
- TDN – 41%
- http://www.ricestrawmarket.org/

77 samples
Gas Production (ml/g DM)

Days Relative to Harvest

-14 to 0
+1 to 4
+5 to 33

4-24h (M202) 4-24h (M401)

-20%  -18%
Temperature

Rice Straw Haylage

30 minute readings 10/27 - 4/11
Rice Straw

- Lab testing
- Minimum criteria
  - ADF – 50 or lower
  - CP 4.5 or higher
  - Only 31.4 percent of samples met these guidelines
- http://www.ricestrawmarket.org/
Variation in Quality

- Fertility (Protein)
- Plant Maturity (ADF, Protein)
- Location – soils (Silica)
- Variety (ADF, Protein)
- Time of Baling (6 days)
Crude Protein of Rice Straw for three years

Observations

Percent

2002 2003 2008
Straw Protein with N Fertilization  2000 Butte

% Protein

Pounds of Nitrogen/Acre

5

6.2

6.2

6.9

5.3

5.5

5

0 50 100 150 200 250
Feeding Rice Straw to Cattle

DANIEL J. DRAKE, University of California Cooperative Extension Livestock Farm Advisor, Siskiyou County; GLENN NADER, University of California Cooperative Extension Livestock and Natural Resources Farm Advisor, Sutter/Yuba/Butte Counties; LARRY FORERO, University of California Cooperative Extension Livestock and Natural Resources Farm Advisor, Shasta and Trinity Counties.

Feed is the largest single cost of producing beef. Producers who have access to alternative feeds often have economic advantages due to the lower costs of production. However, alternative feeds can present challenges due to variable consistency, variable supply, potential toxicants, and unusual composition. Rice straw, a by-product of the rice grain industry in Northern California, is a potential alternative feed for cow and calf producers. Increasing regulations and restrictions on burning rice straw has stimulated interest in using it for other purposes, including cattle feed.

Because rice straw has limited nutritive value (low crude protein and digestibility), it should be used only as a replacement for part of the forage in a ration. It should not be used as a complete ration. Studies of feeding rice straw have shown mixed results, depending on the quality of the straw and how it was used in the ration (see Garret 1978; Garrett and Dunbar 1992; Hull et al. 1972; Nader 1999, 2000; Nader et al. 1998). Poorer animal performance has usually occurred when rice straw was the only feed.

Management by rice growers to produce higher-quality rice straw permits cattle producers to use rice straw as a feed. In this way, straw, a by-product for the rice grower, does not become an air-quality hazard when burned and is converted instead into high-quality human food.

KEYS TO MAKING RICE STRAW WORK IN YOUR CATTLE FEEDING OPERATION

- Make sure the rice straw was baled within 10 days of harvest.
- Test the rice straw for crude protein and ADFI preferably before purchase.
- Determine what other feeds or supplements will have to be provided to meet the nutritional needs of animals.
- Compare costs of feeding options or alternatives.

Corn Stover

- Increase in corn production
- Feeders
- Varies in value
- CP – (3.7 to 5.2)
- TDN - (49 to 54)
## Corn Stover Analysis Results

<table>
<thead>
<tr>
<th></th>
<th>DM</th>
<th>CP</th>
<th>TDN</th>
<th>NO3-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>85.8</td>
<td>3.7</td>
<td>53.4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>82.1</td>
<td>4.5</td>
<td>52.5</td>
<td>1270</td>
</tr>
<tr>
<td>3</td>
<td>84.6</td>
<td>5.1</td>
<td>54.3</td>
<td>1560</td>
</tr>
<tr>
<td>4</td>
<td>77.8</td>
<td>5.2</td>
<td>49.8</td>
<td>750</td>
</tr>
<tr>
<td>5</td>
<td>84.8</td>
<td>3.9</td>
<td>55.2</td>
<td>705</td>
</tr>
<tr>
<td></td>
<td><strong>Average</strong></td>
<td><strong>4.48</strong></td>
<td><strong>53.04</strong></td>
<td><strong>1071</strong></td>
</tr>
</tbody>
</table>

All results are reported on a Dry Matter basis.
## Comparison

<table>
<thead>
<tr>
<th></th>
<th>Crude Protein</th>
<th>TDN</th>
<th>Ash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn Stover</td>
<td>5.9</td>
<td>50</td>
<td>5.8</td>
</tr>
<tr>
<td>Rice Straw</td>
<td>4.5</td>
<td>41</td>
<td>16.6</td>
</tr>
<tr>
<td>Lima Bean Straw</td>
<td>11.3</td>
<td>51</td>
<td>9.3</td>
</tr>
</tbody>
</table>

*Source - By-Products and Unusual Feedstuffs in Livestock Rations Western Regional Extension Publication, No. 39*
Almond Shell

- Low digestibility
- Burner for power, hulls cause slag
- Impaction problems
- 10% or less
Cowboy Logic: “Life is like a roll of toilet paper. The closer it gets to the end, the faster it goes.”
The University of California
1868
LET THERE BE LIGHT