Categorizing Hay for Sale Using Quality Standards

Challenges for Quality-Based Marketing of Hay in the Southeast U.S.

- Most hay production in the SE is (or has been) on farms where:
  - Off-farm income exceeds farm income,
  - Forage-based livestock enterprises are supplementary to other farm enterprises, and/or
  - Hay making is often a recreation/hobby.

- Simultaneously (or perhaps, as a result), total hay production (hay stocks) are disproportionate to animal needs.
  - “We produce more hay than is used in our region.” - Generally

- Disconnect between the nutritive and monetary value of the forage.
  - Contrast with areas where use/fate of hay is predominantly dairy.
    - Hay prices are strongly correlated with nutritive value.
  - In the Southeast, we colloquially have two hay quality categories:
    - Horse hay
    - Cow hay

- Hay is (has been) valued for aesthetic and physical condition
  - Color, texture, “dust,” package size, cultural norms/mythology, etc.

So, is that going to change?
2014 Southeast Hay Convention
Categorizing Hay for Sale Using Quality Standards

High Fuel Prices  High Fertilizer Prices
Finance Pressures?  High Equipment Prices
Higher Pesticide Prices

Categorizing Hay for Sale Using Quality Standards

Forage Quality has High Value Now
Supplementing a Lactating Beef Cow

<table>
<thead>
<tr>
<th>Crop</th>
<th>Maturity</th>
<th>CP</th>
<th>TDN</th>
<th>Supplement†</th>
<th>Cost‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bermudagrass</td>
<td>4 weeks</td>
<td>10-12</td>
<td>58-62</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td>6 weeks</td>
<td>8-10</td>
<td>51-55</td>
<td>4.8</td>
<td>$0.55</td>
</tr>
<tr>
<td></td>
<td>8 weeks</td>
<td>6-8</td>
<td>45-50</td>
<td>7.5</td>
<td>$0.93</td>
</tr>
<tr>
<td>Tall Fescue</td>
<td>Late boot</td>
<td>14-16</td>
<td>66-70</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td>Early head</td>
<td>11-13</td>
<td>60-63</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td>Dough</td>
<td>8-10</td>
<td>50-54</td>
<td>5.3</td>
<td>$0.61</td>
</tr>
</tbody>
</table>

† Assuming 50:50 corn gluten:soyhulls supplementation for forage quality in the low end of the range.
‡ Approximate price = $230/ton (current as of 3-2014).

Supplementing a Lactating Beef Cow + $2.00/hd/day in hay fed

Everybody knows what Forage Quality means, RIGHT?

Quality Standards

<table>
<thead>
<tr>
<th>Quality Standard</th>
<th>RFV§</th>
<th>CP</th>
<th>ADF§</th>
<th>NDF§</th>
<th>DDM§</th>
<th>DMI§</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime</td>
<td>&gt;151</td>
<td>&gt;19</td>
<td>&lt;31</td>
<td>&lt;40</td>
<td>&gt;65</td>
<td>&gt;3.0</td>
</tr>
<tr>
<td>1</td>
<td>125-151</td>
<td>17-19</td>
<td>31-35</td>
<td>40-46</td>
<td>62-65</td>
<td>2.6-3.0</td>
</tr>
<tr>
<td>2</td>
<td>103-124</td>
<td>14-16</td>
<td>36-40</td>
<td>47-53</td>
<td>58-61</td>
<td>2.3-2.5</td>
</tr>
<tr>
<td>3</td>
<td>87-102</td>
<td>11-13</td>
<td>41-42</td>
<td>54-60</td>
<td>56-57</td>
<td>2.0-2.2</td>
</tr>
<tr>
<td>4</td>
<td>75-86</td>
<td>8-10</td>
<td>43-45</td>
<td>61-65</td>
<td>53-55</td>
<td>1.8-1.9</td>
</tr>
<tr>
<td>5</td>
<td>&lt;75</td>
<td>&lt;8</td>
<td>&gt;45</td>
<td>&gt;65</td>
<td>&lt;53</td>
<td>&lt;1.8</td>
</tr>
</tbody>
</table>

§ Standard assigned by Hay Market Task Force of AFGC.
| Reference RFV (100 = 41% ADF and 53% NDF) |
|                               |
|§ Relative feed value (RFV) calculated from (DDM X DMI) / 1.29. Reference RFV of 100 = 41% ADF and 53% NDF. |
|§ ADF = acid detergent fiber, and NDF = neutral detergent fiber. |
|§ Dry matter digestibility (DM, %) = 88.9 - (779 X ADF%). |
|§ Dry matter intake (DM, % of body weight) = 120 / forage NDF (% of DM). |

What is “high quality forage?”

• Forage that is highly digestible (i.e., high TDN)
• Large amounts of the forage can be consumed (i.e., high DMI).
• Relative Forage Quality (RFQ) =
  TDN * DMI/1.23
RFQ Simplifies Comparisons

- Relative Forage Quality
  - Predicts energy based on fiber quality and intake
- Combined into a single value
  - RFQ of 100 is ≈ to full-bloom alfalfa
  - RFQ allows comparisons to be made across forage species

Southeast Hay Contest

- Entries accepted until Sept. 30.
  - Fee ($15) is same as for NIR + Nitrate analysis through the UGA FEW Lab
  - Entry form and check must accompany sample
  - Sample must be obtained using a core sampler
  - Local Extension Agent must take and sign off on your entry
- Results announced at Sunbelt Ag Expo

Southeast Hay Contest Results - 2010

Relative Forage Quality (RFQ)

- Heifer, 18-24 mo.
  - Dairy calf
- Heifer, 12-18 mo.
  - Lactating beef cow
  - Mature horse, int. work
- Heifer, 3-12 mo.
  - Stocker cattle
  - Weanling horse
  - Mature horse, mod. work
- Dairy, 1st 120 days
  - Dairy, last 200 days
  - Dairy calf

Quality Required

Adapted from Ball et al., 2008.
2014 Southeast Hay Convention
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RFQ Simplifies Comparisons
- Relative Forage Quality
  - Predicts energy based on fiber quality and intake
- Combined into a single value
  - RFQ of 100 is ≈ to full-bloom alfalfa
  - RFQ allows comparisons to be made across forage species
  - Allows hay to be easily assigned to appropriate physiological stages
- Could simplify marketing

Southeastern Forage Quality Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>RFQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premium</td>
<td>≥ 140</td>
</tr>
<tr>
<td>Good</td>
<td>110-139</td>
</tr>
<tr>
<td>Fair</td>
<td>90-109</td>
</tr>
<tr>
<td>Utility</td>
<td>&lt; 90</td>
</tr>
</tbody>
</table>

Relative Forage Quality (RFQ)

- Daily, 1st 120 days
- Dairy calf
- Heifer, 3-12 mo.
- Stocker cattle
- Weaning horse
- Mature horse, Int. work
- Dairy, best 200 days
- Heifer, 12-18 mo.
- Lactating beef cow
- Lactating mare
- Mature horse, Mod. work
- Heifer, 18-24 mo.
- Dry cow
- Mature horse, Lt. work

Aspects of this Categorization System
- Because it is RFQ-based it is a more robust method for categorization
  - RFQ is the only tool that is useful in comparing energy and intake across species
- It is a categorization system...
  - It does not favor certain species
    - Analogous to cattle market reports (weight, sex, but not typically breed)
  - It is a first approximation
  - It has indirect links to ration balancing
    - RFQ is not used for ration development
    - Final valuation can be fine-tuned
Aspects of this Categorization System

- Provides at least 3 forage quality categories appropriate for each of the major livestock enterprises:
  - Dairy (choice, prime, and supreme)
  - Horse (standard, select, and choice)
  - Beef (standard, select, and choice)
  - Etc.
- It also isolates hay that is unlikely to be nutritionally sufficient without substantial supplementation (Utility)

How Are Samples Currently Distributed in this Categorization System?

- Premium: 7.1%
- Good: 20.1%
- Fair: 33.8%
- Utility: 61.8%

Frequency of Quality Grades of All Samples Submitted between July 1, 2003 – February, 2011

Typical Range in Quality of Common Forages

How Do Species Compare?

Proposed RFQ Structure Summary

- Forage value needs to be more closely correlated with forage quality (and producer effort/input)
- RFQ enables categorization
- The proposed categorization system is a first approximation:
  - A compromise between simplicity and a detailed look at nutritional value

QUESTIONS?