How to Produce High Quality Hay II: How to cure and handle hay.

Components of Forage Waste:
- Field curing: 5-25% loss
- Harvesting: 7-15% loss


Components of Curing Losses
- Rainfall and leaching
- Respiration

Rate of Respiration Loss Depends on Internal Crop Moisture and Air Temperature

Drying Times Vary

Dr. Dennis Hancock
Extension Forage Agronomist
2008 Hay Production School
How to Produce High Quality Hay II:
How to cure and handle hay.

Mow and Curing Systems

Mower Options
- **Sickle Cutterbar**
  - 10-20% less expense
  - Require 30% less hp
  - Repairs are less expensive
- **Disk Cutterbar**
  - Faster ground speed
  - Cuts through ant hills better
  - Maintenance is 20-30% less
  - Better if crop is lodged

Conditioner Styles
- **Flail (impeller)**
- **Roller (crimper)**

Conditioner Styles
- **Flail (impeller)**
- **Roller (crimper)**
- **Fine stemmed grasses**
- **Thick stemmed grasses**
- **Leafy (legumes)**

Cross Section of Crop Stem
- Stems have a waxy surface called cutin
- Conditioning should scratch or crack the stem surface for faster drying

Dr. Dennis Hancock
Extension Forage Agronomist
How to Produce High Quality Hay II: How to cure and handle hay.

**Conditioner Drying Rates**

Dry Matter Losses from Alfalfa as a Result of Conditioning

<table>
<thead>
<tr>
<th>Relative Drying Rate</th>
<th>Not-ted</th>
<th>Tedded</th>
<th>Yield loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>No conditioner</td>
<td>100**</td>
<td>117</td>
<td>0.7</td>
</tr>
<tr>
<td>Rubber crimping roll</td>
<td>118</td>
<td>148</td>
<td>1.8</td>
</tr>
<tr>
<td>Steel rail</td>
<td>124</td>
<td>150</td>
<td>6.7</td>
</tr>
<tr>
<td>Plastic V-Rail</td>
<td>114</td>
<td>135</td>
<td>3.9</td>
</tr>
<tr>
<td>Average</td>
<td>114</td>
<td>137</td>
<td></td>
</tr>
</tbody>
</table>

** The drying rates are set relative to the control treatment (No conditioner, not-ted).*

**Night-Time Moisture Fluctuations**

**The Effect of Relative Humidity**

**“My Buddy, Ted”**

- Increase hay-drying rates by 20-40% (~0.5 – 1 day)
- DM Loss: Grasses (<3%), Legumes (7-12%)
- Breaks up clumps & distributes the crop over the entire area.
- Increased sun
- Fluffed for better air movement
- Initial tedding: w/in 2-4 hrs (clumps break better)
- Additional tedding? May be necessary for grass, probable for alfalfa

Hay Raking Systems

- **Parallel bar rake**
  - The lowest amount of hay loss, particularly with legumes.
  - Usually ground drive system.

- **Rotary rakes**
  - Some are dual function (rake or ted).

- **Wheel rakes**
  - Operated at a higher speed (saves time)
  - Tend to leave more in the field.
2008 Hay Production School
How to Produce High Quality Hay II:
How to cure and handle hay.

Hay Curing Management
- Conditioner? YES.
- Wide or narrow swath? Wide as possible
- When to mow? Early as possible
- Ted it? YES, but only when damp and toward the end of when the dew is on.
  - Avoid tedding legumes when > 50% moisture
- Moisture at raking?
  - 35-40% for legumes
  - 20-25% for grass/legume mixes
  - ~<20% for bermudagrass
- Moisture at baling?
  - Small square = 16%
  - Round bales = 15%

Square vs. Round
- Round bales
  - Large (800-2000 lbs)
  - Easy to handle, if you have a tractor
  - Less expensive ($/dry ton)
  - Lots of waste
    - If stored outside
    - If fed on ground
    - If accessible over long periods
- Square (small rectangular) bales
  - Small (40-75 lbs)
  - Relatively easy to handle and store
  - More expensive ($/dry ton)
  - Fed with less waste, usually
  - Labor intensive

Bale Accumulator

Bale Grapple (“Grabber”)
2008 Hay Production School
How to Produce High Quality Hay II:
How to cure and handle hay.

Advantages
- High Quality!
  * But, “Garbage in = garbage out”
- Much lower harvest and storage losses
- Min. amount of additional machinery
- No specialized machinery for feeding
- No effluent problems if wilted

Disadvantages
- Higher cost than conventional hay methods
  * costs are offset by losses in hay methods
- Bales can be very heavy
- Some balers can’t bale wet forage
  * Rare these days
- Tears or punctures can lead to spoilage
- Possibility of spoiled silage causing sickness
- Disposal of used plastic

Resources on CD

How to Produce High Quality Hay II:
How to cure and handle hay.

QUESTIONS?

Dr. Dennis Hancock
Extension Forage Agronomist