How Rain Reduces Hay Quality
M. Sullivan

When it comes to weather, those of us in the agriculture field are hard to please. The weather creates great contributions or setbacks to our operations depending on Mother Nature’s timing. The months of May and June continue to exhibit an abundance of rainfall, creating an issue for hay producers. The time it takes for hay to be cut, dry, and wrapped takes days to occur. But what exactly happens to hay if it is rained on? How does it affect the quality?

When forages are cut for hay, the plant does not immediately die until it reaches a certain moisture level (less than 40%). The plant continues to respire and this burns up energy but negatively effects quality. When drying conditions are unfavorable, this extends greater losses in quality. But what happens if hay is rained on while drying? The sooner the rain falls on the hay after cutting, the better. When moisture is leaving the hay, it takes nutrients like protein and TDN with it. If hay is freshly cut, the hay still has moisture and does not soak up the rainfall as readily. If hay is almost done drying and gets hit with a rain, the hay is re-saturated with moisture leading to more leaching of nutrients. The rainfall also knocks off lush leaves that house greater quality forage than the stems. The trick to getting the hay off the field is timing and all dependent on weather. Many times if hay is put up a little green, mold counts are increased if moisture exceeds 20% at baling. The growth of these molds affect quality as well, as the heat from microbe growth breaks down nutrients within the hay and can also leads to animal refusal. The only reliable method to see what exact nutrients are available is a proper hay analysis. The Extension Service is available to testing for $20 per sample, contact Michael at the Extension office for further details.
Hay Production’s Effect on Soil Nutrients  

Many farmers in Arkansas are battling wet conditions and chomping at the bits to get in the field whether it is row crops or hay pastures. Many of the hay fields that I have seen are excessively mature because of an uncooperative weather. When we think about hay production and quality, it is essential to think about soil fertility and just how much each bale of hay extracts the macronutrients nitrogen, phosphorus, and potassium from the soil. Soil fertility and nutrient qualities within the soil effects hay production and quality in a significant manner. It is amazing to see thousands of bales of hay cut, dried, processed, and put up throughout Arkansas but it is important to see what’s leaving with those golden brown bales. Fertilization is an important aspect of pasture and hay management in that it dictates forage quality as much as cutting intervals. The table below depicts the pounds of nitrogen, phosphorus, and potassium that are exported from the soil based on a ton of hay per acre.

<table>
<thead>
<tr>
<th>University of Missouri</th>
<th>Nitrogen (N)</th>
<th>Phosphorus (P2O5)</th>
<th>Potassium (K2O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool Season Forages</td>
<td>45 lbs</td>
<td>12 lbs</td>
<td>50 lbs</td>
</tr>
<tr>
<td>Warm Season Forages</td>
<td>35 lbs</td>
<td>10 lbs</td>
<td>35 lbs</td>
</tr>
<tr>
<td>Pasture (100 days)</td>
<td>60 lbs</td>
<td>5 lbs</td>
<td>17 lbs</td>
</tr>
</tbody>
</table>

To put in Laymen’s terms, the average 4x5 round bale weighs 825 lbs and if a farmer were to harvest 2 bales per acre (1650 lbs hay), then those 2 bales would extract a total of 37 lbs of nitrogen, 10 lbs of phosphorus, and 42 lbs of potassium per acre after the first cutting of cool season hay. Now that may sound insignificant or a lot depending on the viewpoint, but when you harvest the first cutting, the second cutting has to have fuel to feed the forages. With low fertility comes a reduction in forage performance, prolonged harvest intervals, a decline of hay quality, and a more open canopy for weeds to emerge that may like the low fertility. Replenishing of soil nutrients is an important aspect of hay production, and a crucial management decision that should be examined by all farmers. Based on current commercial fertilizer prices, 300 lbs of triple 13 per acre (13-13-13) would replace the mined nutrients with excessive phosphorus after application running around $60 per acre. If using poultry litter, an application of half a ton per acre would also remedy the deficiency but may be restricted by availability. For more information about hay quality, soil fertility and testing, or other pasture management questions, contact Michael at the Extension office-965-2272.
Understanding the difference between
Dry Matter and As-Fed  M. Sullivan

There is no easy way to bust down the barriers of understanding cattle rations, formulations, and requirements. One common aspect of feeding livestock is the difference of as-fed rations versus dry matter rations. Within extension, we report all feed based information in the dry matter format because it is the actual nutrients that are utilized by the animal. The dry matter format is the as-fed format without the water of that hay or grain. As-fed recommendations are exactly what they sound like, what your total nutrients is with the moisture still figured into the ration. As the amount of moisture in a feed increases, the amount of the nutrients like TDN (energy) and protein decreases because the water content is taking the place of that nutrient. When purchasing exotic feedstuffs, always ask what the moisture content of the feed is. Most commercial feeds (corn, soybean mean, dried distillers grain, etc) range higher than 88% dry matter so they are nothing to worry from a moisture standpoint. Keep in mind that overfeeding can be a problem if supplementing animals on an as-fed basis because these figures are higher that dry matter and need to be “watered down” in order to estimate the actual values needed by livestock. For more information about supplementation, ration balancing, or other information contact Michael at the Extension office-965-2272.

Horsenettle  M. Sullivan

Photo courtesy of USDA-NRCS website

Horsenettle (Solanum carolinense) is a noxious perennial weed that plagues pastures throughout the country. This persistent weed reproduces by seed and its extensive root system, which leads it to spread very easily. Common physiological characteristics include a star shaped white flowers with a yellow center housing stickers (spines) along the plants stem. This summer weed emerges in June and blooms around 30 days later. The taproot can grow as deep as 8 feet and horizontally 4 foot in diameter making it a tough weed to control. Livestock avoid this poisonous plant and the forages that it grows in due to its bitter taste and external spines. Grazon P+D (3-4 pints/A) or GrazonNext HL (2 pints/A) are two good herbicide choices for horsenettle control and should be applied between bloom and fruit set. Due to its persistence, a single herbicide application is usually not effective and will require a 3 year application to reach 90-100% control. Horsenettle should not be mowed until 2 weeks after a herbicide application in order for the herbicide to work its way into the root system thoroughly.