Rains Will Likely Result in Lower Quality Hay

By Jackie Nix

Now is the time to start thinking about hay supplies for the winter. Hay accounts for the majority of winter feed for cattle. An average cow (1000 lbs) will require 2700 lbs of hay over a 90-day feeding period. That translates into roughly 54 square bales (ave. 50 lb each) or 5 1/2 round bales (ave. 500 lbs each). Unfortunately, persistent rains during the past spring and summer are likely to result in a poor hay crop for the coming winter. In many cases rains delayed cutting of forages, damaged already-cut forages in the field or forced some to harvest hay at improper moisture levels. If you harvested or bought rain-damaged hay this year, the question now is how bad is the damage and what is the feed value of the resulting hay.

How Over-Maturity Affects Quality

Weather delays can set back hay harvests by weeks in some cases. This delay can result in over-mature forages. While species variations exist, in general as a plant matures, it converts from a vegetative (leafy) state into a reproductive (stemy) state. When a plant is in the reproductive state the plant's nutritional resources are focused on producing reproductive structures (flowers, stem, seeds, etc.) instead of leaves. Nutritional quality decreases due to an increase in indigestible fiber (stem) and decreased nutrient content (less leaves). The total loss of quality is dependent on the type of forage. Grasses mature faster than legumes such as clover or alfalfa. Thus nutritional quality of grasses such as Bermuda or Fescue drops off faster than that of legumes. Indicators such as stem size and stem softness as well as the presence of seed heads or flowers can help to gauge forage maturity. Hay containing mature seed heads will be low in nutritional quality. Desirable hay contains an abundance of leaves and generally lacks seed heads and large stems.

How Rain on Cut Forages Affects Quality

Damage occurs through a variety of different avenues. First rain causes leaching of nutrients from the cut forages. Secondly, rain contributes to leaf shatter. And lastly, wet forages result in increased drying times.

Rain causes highly soluble cell contents to leach out of the plant. Unfortunately, these highly soluble components are highly digestible by the animal and include soluble carbohydrates and nitrogen, as well as minerals and vitamins. Loss of soluble carbohydrates results in a reduction in TDN (total digestible nutrients). Because soluble carbohydrates are lost during leaching, structural fibers become more concentrated in the forage. These fibers are largely indigestible and thus reduce the overall digestibility of the forage. Hay digestibility may decline from 6 % to as much as 40 %. An Iowa State University research trial documented a crude protein reduction of 3% and TDN (a measure of energy content) reduction of 4.6% in second cutting alfalfa-grass hay due to rain damage.

Leaf loss also affects quality. The drier the hay, the more susceptible it is to leaf shatter. The force of the rain itself can cause leaves to shatter or fall off, but a more likely cause of leaf loss is due to increased handling caused by rain. Hay containing less than 30% moisture will be very prone to leaf loss when raked or tedded. This is especially true of legumes (alfalfa, clover, peanut, etc.).

Obviously, forages that have been rained upon require longer drying times. This can negatively affect quality by prolonging respiration. Respiration is a natural process that results in the breakdown of carbohydrates within the plant by enzymes found in the plant. This process occurs whether the hay has been rained upon or not. Respiration losses will occur until the forage moisture drops to below 30%. These losses are normally about 3 to 4% of dry matter. However, when the forage has been wetted by rain this process is prolonged or begins again (when hay was previously below 30% moisture).

How Baling at Improper Moisture Levels Affects Quality

Hay baled at 22 % moisture or above will usually develop mold and undergo excessive heating. Molds on hay will certainly reduce overall palatability and nutritional content, but some varieties can produce toxic compounds. Extreme caution is advised when feeding moldy hay. Under normal conditions, the low moisture content within properly cured hay will inhibit microbial growth and thus spoilage. However, wet hay (above 22% moisture) contains enough moisture to allow growth of anaerobic bacteria. Given proper conditions, enough heat can build up to cause spontaneous combustion and hay fires (over 200° F). Even if hay does not ignite, excessive heat will damage protein and reduce overall digestibility and palatability.

What do I do if I Have Rain-damage hay?

The first thing is to have a forage analysis performed on the hay in question. A forage analysis determines the feed value of the submitted sample on a chemical basis. This will allow you to access the true extent of the damage and determine which groups of animals should (or should not) receive the hay. Nutritional values listed in the feed analysis report will include such basics as moisture content, protein content, relative energy content, and levels of selected minerals. Often you can request special tests for certain toxins if you suspect that there may be a problem. Your local Cooperative Extension agent or feed dealer can give you information on how to perform this analysis.

In the absence of a forage analysis, assume that the quality is poor and feed only to mature cattle (bulls and cows in the first half of pregnancy). Try to avoid feeding low quality hay to calves, lactating cows and cows during late pregnancy. Even with these precautions, a nutritional supplement will probably be necessary when feeding this hay.

What Types of Supplements Are Out There?

Nutritional supplements come in all shapes and sizes and range from commercially produced tubs, blocks or pellets to natural feedstuffs known to be relatively high in protein or energy such as soybean meal or corn. Choosing which type is best for your operation will vary according to individual circumstances. In many cases a variety of supplement products will best meet cattle needs. Contact your local Sweetlix® representative for more information.

Sweetlix® Protein Supplements available

Sweetlix® offers a wide variety of protein supplement products to allow the greatest amount of flexibility for cattle producers. Here are a few of the Sweetlix® supplements available to help bridge the nutritional gaps caused by poor quality hay:

Sweetlix® EnProAl® 16% & 20% Poured Tubs

- All natural protein supplements ideal for young, growing cattle
- Deliver same amount of magnesium as high-mag minerals to help protect against grass tetany
- 55 to 60% TDN – up to 15% more than competitors
- Predictable feed costs (regular and consistent consumption of 1-2 lbs per head per day)
- Convenient, self-feed tubs – no bunks or feeders required
- Deliver twice as much protein daily as comparable all-natural low moisture tubs
- Recommended that you provide an additional complete Sweetlix® loose mineral supplement

Sweetlix® EnProAl® 24% & 25% Poured Tubs

- Ideal for mature cattle on low quality forages
- Added non-protein-nitrogen for optimal forage utilization and economical feed conversion
- Deliver same amount of magnesium as high-mag minerals to help protect against grass tetany
- Predictable feed costs (regular and consistent consumption of 1-2 lbs per head per day)
- Convenient, self-fed supplement
- Should not be used with horses or young cattle with immature rumen function
- Recommended that you provide an additional complete Sweetlix® loose mineral supplement

Bovalyx® 12% & 18% Low Moisture Blocks

- All natural protein- ideal for all classes of cattle
- Predictable feed costs (regular and consistent consumption of 0.5 to 1 lb per head per day)
- Convenient, low-waste, self-fed supplement
- Highly concentrated source of essential nutrients
- Recommended that you provide an additional complete Sweetlix® loose mineral supplement

Bovalyx® 20%, 28% & 37% Low Moisture Blocks

- Ideal for mature cattle on low quality forages
- Added non-protein-nitrogen for optimal forage utilization and economical feed conversion
- Predictable feed costs (regular and consistent consumption of 0.5 to 1 lb per head per day)
- Convenient, low-waste, self-fed supplement
- Highly concentrated source of essential nutrients
- Recommended that you provide an additional complete Sweetlix® loose mineral supplement

In summary, the excessive rainy weather this spring and summer will likely result in a hay crop with lower-than-average quality for a variety of reasons. When feeding low quality hay, nutritional supplements are necessary to maintain reproductive and growth performance. Feed supplements pay for themselves in added production when used properly in these situations. For more information about the Sweetlix® line of protein supplement products for cattle and information to help you decide how they fit into your management situation, contact your local Sweetlix® dealer or call **Sweetlix®** at 1-87SWEETLIX.

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