



Rains May Result in Lower Quality Hay

By Jackie Nix

The wet spring and summer seen by many in the US may result in a poor hay crop for the coming winter. In many cases rains delayed hay harvest, 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 such as alfalfa or clover. 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 and increased handling.

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 60% 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 the rain. Hay containing less than 30% moisture will be very prone to leaf loss when raked or tilled. 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/or 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 I would recommend is to have your hay chemically analyzed. This will allow you to assess the damage and determine which groups of animals should (or should not) receive the hay. In the absence of a forage analysis, assume that the quality is poor and feed only to mature goats (bucks and does in the first half of pregnancy). Try to avoid feeding low quality hay to weaned kids, lactating does and does during late pregnancy. Even with these precautions, a nutritional supplement will probably be necessary when feeding rain-damaged or over mature 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 your goats' needs.

Sweetlix® Protein Supplements available

Sweetlix® offers a variety of protein supplement products to allow the greatest amount of flexibility for goat producers. Here are a few of the Sweetlix® supplements available through your local Sweetlix® dealer.

Sweetlix® Meat Maker® Roughage Balancer Tub (983)

- Optimal energy, protein and mineral content make this an ideal supplement for flushing programs
- High molasses content is ideal for does susceptible to pregnancy toxemia in the last trimester
- 55 to 60% TDN – energy content comparable to high quality grass hay
- 16% protein from all-natural sources
- 100% of daily-recommended amounts of trace minerals, including copper and selenium
- Convenient, durable 50-lb non-returnable, plastic yellow tub can be placed directly in the pasture with goats
- Handy lids make stacking for storage easier
- Superb weatherability – will not crumble, melt or blow away – with minimum waste
- No additional salt or minerals needed or recommended

Sweetlix® 20% Meat Maker® Pressed Block (988)

- All natural protein supplements ideal for young, growing kids and lactating does
- Delivers 100% of daily recommended amounts of trace minerals, including copper and selenium
- Convenient 33.3 lb block can be placed out in the pasture with goats
- 20% protein level to supplement low quality hay
- No additional salt or minerals needed or recommended

In summary, the excessive rainy weather this spring and summer will likely result in lower-than-average quality hay 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 goats and information to help you decide how they fit into your management situation, call **Sweetlix®** at 1-87SWEETLIX.

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