More Hay, Better Hay, Same Acres

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Between last year's drought in the Southwest U.S. and growers converting hay acres to corn to take advantage of higher grain prices, current hay inventory is low. On a national level, depleted hay inventories will persist for an extended period of time. The last USDA hay stock report indicated the lowest inventory since 1988 and total inventory is 11% below last year. Growers harvesting one more cutting from an existing hay field will not only sell more tonnage, but may experience tremendous profits as the hay shortage persists.

This spring, weather conditions in the Midwest are unusually warm and plant growth started earlier than usual. If moisture is not a limiting factor, hay fields could produce an additional cutting in 2012. One management technique that can assist in harvesting an extra hay cutting is the use of organic acid treatment. Growers using an acid treatment to preserve forage and inhibit mold growth could bale hay two days earlier at higher moisture levels. By removing the cut forage, alfalfa and grass plants regrow earlier, with greater productivity and increase the likelihood of capturing that additional cutting.

But doesn't wet hay mold? This is true for untreated hay. Dry hay lacks sufficient moisture to support microbial growth because microbes need adequate moisture to survive. Unlike hay, silage has more moisture, but the organic acids naturally produced during fermentation restrict bacteria and molds from ongoing fermentation. By the same token, dropping the pH of hay by adding organic acids will also limit microbial growth. Adding organic acid treatment at the baler provides the opportunity to bale hay at higher moisture levels and eliminate microbial degradation of hay.

Utilizing organic acid treatments on each cutting of hay may help safely fill barns with more nutritious, digestible, mold-free hay which will better meet livestock needs. Harvesting more nutrition per acre is the goal of any successful forage program.

The advantages to baling earlier with the use of an organic acid are numerous:

1. **Remove forage from the field earlier.** If it typically takes 3-5 days for cut forage to dry enough for baling, you could bale 1-3 days sooner at a higher moisture level.
2. **Regrowth can start earlier.** By taking the cut forage off the field a few days earlier, plants will have full exposure to sunny conditions and regrowth starts right away.
3. **Maintain higher quality forage.** Alfalfa leaves make up 50% of the plant material and can contain approximately 70% of the plant's crude protein and 90% of the feed value. Dry leaves are easily shattered during handling, resulting in nutrition falling back onto the ground. Baling at 25-30% moisture content greatly reduces leaf loss.
4. **Dropping the pH helps stop plant respiration.** Even after cutting, forages with sufficient moisture will continue to live, respire, and use nutrients. Treating the moist forage with organic acids stops respiration and helps maintain nutrient levels.
5. **Alter the hay calendar for the entire growing season.** If you complete the first cutting earlier, the entire hay season shifts. The second crop may now experience regrowth under cooler growing conditions and lingering effects of spring rains.
6. **More flexibility to work around bad weather.** Choosing to bale earlier may give opportunities to cut and bale during narrow windows of good drying conditions.
7. **Additional late season cutting is possible.** If every cutting is removed 2-3 days earlier, by August or September, enough time may be saved to consider an additional cutting. Late season cutting should experience cooler temperatures and sufficient moisture to produce high quality, digestible hay crop.

To treat hay with organic acids, look for a product that contains at least 60% propionic acid blended with acetic acid and benzoic acid in a buffered solution. Treating hay with this blend of organic acids has been shown to offer better control of a wide range of microbes not inhibited by propionic acid alone. Yeast and mold growth are best controlled with multiple organic acids. When the organic acid solution is buffered, it is less corrosive to equipment and is safer to handle. Apply the organic acid solution at baling. Do not spray the cut forage as it lies drying on the field or after you have baled the hay. Store the treated hay separately from any untreated hay, and keep treated hay off the ground in a well-ventilated barn.

Higher moisture hay that has been properly treated with organic acids has less risk to overheat. Untreated high moisture hay is an ideal environment for yeast and mold growth. Mold and yeast fermentation is an aerobic process and produces heat. High temperatures (above 110° F) result in browning of the hay (Maillard reaction) and protein becomes bound. Bound protein appears in a forage analysis as "ADIN" and is unavailable to the animal. Excessive heating leads to combustion and barn fires. Never put untreated high moisture hay in storage.

The early spring has opened an opportunity for a rare additional fall cutting. Coupled with the strong hay price, growers who can find a way to take the additional cutting will reap the benefits of this unprecedented profit windfall. By turning to trusted forage preservation techniques, the prospect is excellent for harvesting more hay, better hay with the same acres.

Table 1. Application rate guidelines for alfalfa hay.

Small Square & Large Round Bales	
% moisture	*lbs/acid tmt/ton*
18-20	4
21-25	6-8
26-30	12-15
Large Square Bales	
% moisture	*lbs/acid tmt/ton*
15-20	8
21-24	12
25-27	14