Making Quality Hay or Haylage
Contact: Eldon Cole, livestock specialist, Lawrence County

MT. VERNON, Mo. -- A lot goes into making high-quality hay. Perhaps the primary way to produce the kind of hay that will give top milk and meat production is to cut the hay at the optimum stage of maturity.

Whether it's a cool-season grass, a warm-season grass, wheat hay or a legume crop they all have an ideal time to be cut for peak quality.

For optimum quality, orchard grass and fescue should be cut in the boot to early head stage. Alfalfa quality usually peaks in the bud to one-tenth bloom stage. Red clover is best cut in the early bloom stage. Small grains are best cut in the boot to the early head stage, like fescue.

Peak quality is usually defined as a forage with low neutral detergent (NDF) and low acid detergent fiber (ADF). That typically translates into a hay or haylage with 60 percent or greater total digestible nutrient (TDN) and crude protein (CP) value of 12 to 20 percent or greater. These values are on a dry matter basis.

PROPER MOISTURE

After cutting the hay, the next critical practice in making hay suitable for a blue-ribbon at a hay show or for hungry animals is to bale it at the proper moisture. Small rectangular bales should be baled ideally at no more than 20 percent moisture. Large hay packages are best baled in the 16 to 18 percent range for dry hay.

Haylage or bailage is growing in popularity in this area and a desired target on moisture is 40 to 60 percent with 50 percent being about ideal. These targets, for both dry and high moisture forage, are sometimes hard to hit.

Determining moisture is not an exact science but farmers develop various methods of “getting in the ballpark.” Most rely on the feel of the hay as they hold and twist it or kick it.

Some new methods are now available to determine moisture more accurately. A basic microwave oven and a small scale that weighs in grams can do the job nicely with high accuracy.

Details on the process are available in the “Agriculture Guide Sheet 3151 – Using A Microwave Oven to Determine Moisture In forages” online at http://extension.missouri.edu/p/G3151

Dry hay baled with moisture levels above 22 percent lose dry matter due to excessive heating, molding and even in some cases spontaneous combustion is possible. In the latter case, hay barns may even be burned to the ground.

A few farmers have invested in hay moisture testers. Prices range from $100 up to $600 or even more. Most feel the testing is reliable and has reduced their moldiness in dry hay.

Moldy hay usually does not cause problems in cattle other than refusal to eat it. Horses are more sensitive to moldy hay, and only non-moldy hay should be fed to them.

Moisture testers appear to be most helpful in determining when to wrap high moisture hay.

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Wrap as soon as possible after baling, hopefully within four hours. Be sure to keep the wrapped bale hole free. Even fairly small holes can result in significant moldiness. Other mold problems may arise from inadequate wrapping and delaying wrapping for two or so days.

Be careful how you move the bales. If holes develop, promptly cover the holes with the special tape. The adage, “easy does it”, is especially true when handling plastic wrapped haylage.

Stored forage is expensive so if you can save losses due to waste from harvest to feeding you’ll be money ahead.

MORE INFORMATION

For more information, contact any of these MU Extension agronomy specialists in southwest Missouri: Tim Schnakenberg in Stone County, (417) 357-6812; Jill Scheidt in Barton County, (417) 682-3579; John Hobbs in McDonald County, (417) 223-4775 or Sarah Kenyon in Texas County, (417) 967-4545.

PHOTOS AVAILABLE FOR USE WITH THIS STORY
These may be downloaded for free from the regional photo library at www.flickr.com/MUExtension417 or by using these direct links to the photos.
Moldy Hay: https://flic.kr/p/rQH1vn
Hay Probe: https://flic.kr/p/sKcGmu
Packing Hay: https://flic.kr/p/rQwens

Hay Testing will be Important in 2015
By: Sarah Kenyon

Wet weather conditions during hay season will likely result in lower forage quality. Because of this it is important to test hay to determine forage quality. Hay should be tested before winter feeding to ensure that the nutrient requirements of the livestock are being met.

Studies have shown that rainfall itself has little impact on hay quality. When hay gets wet there is some nutrient leaching and is dependent on the timing and intensity of the rainfall. If rain occurs soon after the hay is cut, very little loss is experienced. If rain occurs when the hay is dry and brittle more nutrient leaching is possible. Hard, intense rains will result in more leaf loss than slow, steady rains.

The number one factor that impacts forage quality is the stage of maturity during harvest. Frequent rainfall can delay cutting resulting in increased forage maturity, ultimately resulting in reduced forage quality. High quality grass hay should be harvested during the boot stage before seed development.

A wet condition during hay harvest has delayed hay production, resulting in more mature forage. Have hay tested to determine what production stage the forage can be fed to or to determine if additional supplementation is needed to meet the animals nutrient requirements. Remember, the goal in growing forages is to produce feed that will meet the nutritional requirements of the animals.

Proper Hay Storage Tips
By: Colin Hill, Agronomy Graduate Asst., Taney County

With the rain behind us, we can finally get out to put up hay. However, with the moisture we have had, it is important to insure hay moisture levels are correct before baling to prevent hot hay quality loss and the chance of fire.

The moisture of dry hay at baling is critical to hay quality during storage and can be the difference between high quality hay and trash. Small square bales should be baled at less than 22 percent moisture, and round bales should be less than 18 percent moisture before baling. Hay baled with more than 22 percent moisture should not be put into storage for at least thirty days, especially if hay will be stacked several layers deep.

Safe storage temperatures are less than 120 degrees, above this excessive molding and heating occurs, fire danger begins at an internal temperature of 170. Bale temperature usually peaks four to seven days after baling, and can increase rapidly if conditions are favorable.

For bales stored outside, barn fire danger is lost, but quality remains an issue. Excessive heating and molding can cause the loss of as much as one-third of the feeding value of hay bales at 28 percent moisture. Outside storage combined with loss of feed value due to poor digestibility can result in a loss of total feed during storage of around 25 percent which results in a 25 percent loss of the initial investments like land, fertilizer, time, and fuel.

Following some general guidelines when storing dry hay outside can reduce storage losses. Always store bales on a well-drained area, some farmers place bales on poles or crushed rock to minimize losses on the bottom of bales. Use a minimum of three feet between bale rows for air circulation, and always place bale rows going north to south. Avoid storing bales under trees and in the shade of buildings, if space is available, store some of the bales inside, especially the higher quality hays that should be used near the end of the feeding period.

Investing in a hay moisture tester and a bale thermometer can improve hay quality and remove guesswork and stress from haymaking. See Extension publication G4575 or contact Colin Hill, University Missouri Extension in Taney County at (417)-546-4431 for more information.

Tapping into Great Local Weather Data
By: Dr. Mark Jenner, Ag Business Specialist Bates County

A few weeks ago we got a new MU Weather station in Bates County at the high school in Butler. This is probably better news for Bates County than for the Ag News & Views area, but it is still good news for all of Missouri weather data users. MU Extension is adding weather stations to their system and the more weather stations that are available, the more accurate the data is for everyone.

MU Extension maintains weather stations scattered across Missouri in 24 counties. These stations are used together with the National Weather Service stations in a program the University developed called Horizon Point. Horizon Point is a personalized weather program that can be viewed on the internet, but it is set up to be emailed to you as frequently as you would like this weather information. I have mine sent to me every Friday afternoon.

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The best parts of Horizon Point are 1) that it is free, and 2) it is focused on local weather events.

The Horizon Point program provides the traditional, site-specific weather information such as:
- Historical and Forecasted Precipitation
- Minimum and maximum, temperature, and
- Wind Speed and Direction

In addition, Horizon Point provides advisories by plant and animal scientists and agricultural engineers. When someone signs up and creates a Horizon Point account, they provide an email address and the latitude/longitude coordinates for the location for which they want the weather information.

The Horizon Point program, as well as the individual weather station data, is located on one of the MU Extension websites, which we call Ag-Ebb. AgEbb began as our Agricultural Electronic Bulletin Board. Following this website address, agebb.missouri.edu/horizonpoint, will get you to the home page. Once you sign up, then you log in.

The weather-based advisories available through Horizon Point include:
- Soil Temperature at Planting Depth
- Both Weed and Insect Scouting Aid
- A Stored Grain Moisture Management Table
- A Fall Nitrogen Application Chart
- Rainfall Runoff Estimator
- Animal Comfort Indices, and
- Pasture Rangeland and Forage (PRF)
  - Rainfall Index Monitor (Which is used with the forage crop insurance that is available). Those interested in learning more about this insurance can do so at extension.missouri.edu/explorepdf/agguides/agecon/g00457.pdf.

Chosen advisories are sent only in the seasons when they are appropriate. For example, soil temperatures are important in the spring for planting and the fall for fall applied fertilizer management. So, soil temperature advisories are not sent during the summer when they are not critical to any management decision.

The emailed reports contain hyperlinks to management information such as weed seedling pictures and how to use equilibrium moisture content to maintain stored grain quality.

Horizon Point subscribers are given a secure account page where they can manage such selections as email frequency and which advisories they receive. Farmers can also access archives of site-specific daily reports for the last month.

This program is not limited to farmers. If you have family living in other parts of Missouri, or other reasons to be interested in local Missouri weather, Horizon Point may be able to meet your needs.

Weather, or not, you can find the best information in MU Extension!

Strawberry Bed Renewal
Source K-State

Next year's strawberry crop will be affected by what you do to this year's strawberry bed. The sooner after harvest the patch is cleaned up, fertilized and irrigated, if possible, the better the chance of getting a good crop next year. One of the main goals in renovation is to provide a high level of sunlight to plant leaves so they can manufacture the food the plant needs. Removing old leaves and weeds will cause new, non-diseased leaves to develop and remove competition from weedy plants. Remove leaves by mowing. Be sure the mower blade is high enough to avoid the strawberry crowns.

It is also important to reduce the number of strawberry plants so they do not compete for light, moisture and nutrients. If you have a small bed, you can hoe out the plants so they are spaced about 4 to 6 inches apart. On large beds, adjust a rototiller so you can till between the rows, and cut each row back to about 10 inches wide.

The next step is to fertilize the plants with about 3/4 to 1 pound of a complete fertilizer such as 13-13-13 (nitrogen, phosphorus and potassium) or an equivalent on each 25 feet of row. If a soil test shows adequate levels of phosphorus and potassium, use 3/4 pound of a 16-0-0 (nitrate of soda) fertilizer per 25 feet of row instead.

The next step is to irrigate to wash the fertilizer into the soil and provide moisture for the rapid growth of the strawberry plants. When the soil is dry, apply about 1 inch of water. A garden sprinkler can do a good job applying the water.

Controlling weeds and watering throughout the summer are important so plants are vigorous when fruit buds begin to develop in September and October. There can be modifications of the renovation procedure depending upon the condition of the planting. If plant spacing is sparse and leaves are healthy, mowing may not be beneficial. Also, if there are large open spaces between plants, thinning out plants is unnecessary.

For additional information on strawberries, there is a University of Missouri guide sheet, G 6135, "Strawberry Cultivars and Their Culture" that can be picked up at your county extension center.
Dear Gardening Enthusiast:

Planning is underway for a late summer Master Gardener core training course. The class will be 10 sessions (meeting 2 times per week) with a total of 30 hours of instruction. Subjects covered include soils and composting, plant basics, turf, vegetables, trees in the landscape, perennial and annual flowers, woody ornamentals, plant insects and diseases, roses and fruit crops.

Several have expressed an interest in an evening class (6 to 9 pm) and the classes will be held at the University of Missouri Extension Center in Pineville or Neosho. There needs to be a minimum of 12 people enrolled for the class. Let your friends and neighbors know about this class so we can get 12 enrolled. The tuition is $155 per person. There are other reference materials that you may purchase but not mandatory for the course.

Please call or email for more information about the classes. Please let me know you are interested in taking the class by July 22, so I can begin scheduling instructors. Please call me at 417-223-4775 or by email at hobbsjc@missouri.edu.

John Hobbs
Master Gardener Coordinator

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