Extension Cattle Call

Stanly County Livestock Market- Norwood

August 2017

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Wet Hay Can Cause Fires

Glenn Detweiler, Livestock Agent, Catawba & Lincoln County

In North Carolina on July 20, 2017 at 3:30 am a fire department received a call reporting a stacked and tarped hay pile on fire in their district. Details include: The hay had been baled 3 weeks ago. One week ago it was stacked and covered with a black tarp. Another hay pile stacked nearby did not catch on fire and the only difference appeared to be the tarp was white. I was asked if the black tarp caused the hay to heat up and start the fire. It is impossible to answer with a definite yes or no because hay catches on fire for a number of reasons that tend to build on each other. I think a quick review of these reasons will help all of us in our hay making and storage decisions with this very moist summer. We all know If hay is baled too wet and packed too tightly into storage, severe heating can occur, causing significant dry matter and quality losses or worse – a hay fire. In spring and wet summers, we are often tempted to bale hay at a little higher moisture content when threatened with rain the next day. Just as compost becomes hot due to microbial activity, so does moist hay. NCSU research data also has shown heat results from plant respiration alone. Heating is a natural occurrence, with temperatures reaching over 120^0F even in hay baled at safe moisture contents. If excess moisture is present, heat-resistant fungi become active, which can drive the temperature in the bale to over 150^0F. Above about 170^0, the microorganisms die, but heat-producing chemical reactions continue to drive temperatures up. Spontaneous combustion can occur if the material is exposed to air. Hay fires can occur two to three weeks after the hay is placed into storage. Generally, when temperatures in the bale go above 140^0, we should begin checking the hay daily to see if temperatures continue to rise. Temperature readings between 140^0 and 170^0F provide no clear indication of pending problems. If temperatures are between 170^0 and 180^0, hay must be checked every few hours to monitor changes. If the temperature is above 180^0F, producers are advised to call the fire department. When smoldering hay is exposed to air, it can undergo spontaneous combustion. It is imperative that the fire department be present before attempting to move any hay with a temperature above 180^0F.

Wise management decisions can prevent hay fires. First, pay close attention to the moisture content of the grass at baling. Optimum moisture content for baling depends on bale size. For small square bales, the moisture content should be no more than about 20% during low humidity. During warm, moist air conditions, the moisture content should be reduced to 18 % when baling small square bales. The upper limit for round bales is about 16% because of their larger size. For round bales, consider reducing the bale diameter if baling wet hay. In rare cases, round bale moisture content can be increased to about 20% if bales are stored outside, separated, and unprotected.

The second thing affecting hay heating is bale density. The denser the bale, the greater the resistance for heat to move through the hay. Some producers will not wrap the outer layer as tight to reduce bale density. If hay is baled "wet", it is a good practice to leave round bales outside for at least three weeks before putting them into barn storage. If small square bales are placed into the barn, bales should be stacked loosely to allow for plenty of air circulation. For large round bales, producers are advised to arrange bales loosely in a single layer for at least four weeks before stacking tightly. Granted, this takes more time and labor, but the risk of a fire is greatly reduced.

Area Feeder Calf Sale – August 24th at Harward Brothers Livestock Market

- Cattle accepted from 7:00 AM to 3 PM
- Cattle are grouped according to sex, weight, and grade to create uniform groups. Which are many times able to be combined into truckload lots which increases the value of the cattle.
- Calves are weighed with very little wait time which will provide you with the most value for your calf.
- Call your local Extension Agent for more details.

Hay Storage

Carl Pless, Agriculture Agent, Cabarrus County

You have grown, mowed, raked and baled hay as a source of nutrition for your cattle when forage from growing forages is not available in sufficient quantity to meet the nutritional needs of your cattle. The goal of storage is to preserve as much of the hay's nutrition as possible for the cattle to eat. Fungi, molds and bacteria living on the hay can reduce the quantity and quality of the stored hay. Fungi, molds and bacteria need moisture and air to live, grow, and damage the hay. Rats and mice can damage hay made form forage that has seeds.

Storing well cured hay in a barn or shed with a roof that does not leak and has good ventilation can prevent moisture from entering hay from the top side. Moisture can wick up into hay stacked on a concrete or dirt floor. A layer of plastic, pallets or 2 inch or larger stone can provide a rather effective moisture barrier from below. Blocking direct sunlight from fully cured hay can prevent nutritional loss, especially protein and vitamin A.

Hay can be stored outside under tarps. Stacks should be located where there is good drainage. A bed of stone can reduce storage loss and make easier access to the stack when feeding during wet weather. Bales should be stacked with a crown to allow water to flow off the stack. Tarps should not extend to the ground as air is needed for the hay to breathe. Tarps should inspected frequently for damage and should be kept tight to insure that they stay on in windy conditions.

If hay must be stored outside uncovered, it should not be stored under trees. Storing a row of bales in a north/south direction will allow drying around the hay. Storing hay up and down the slope will allow water to drain away from the hay. Storing hay along the slope will allow water to run under the hay. Fine blade hay can form a thatch allowing water to shed. If the hay is to be left uncovered, bales should be moved into the storage area as soon as possible after harvest. Moving after a thatch has formed will cause greater loss as a new thatch is formed. Coarse stem hay will allow water to enter the bales and cause much damage. Putting the bales on a 1 to 3 inch stone bed 4 to 8 inches deep can allow water to rapidly drain away from the hay.

Haylage is hay baled at a moisture content of 30 to 60 percent moisture. It should be wrapped in white plastic as soon as possible after bailing. Excluding air allows the hay to ferment, producing acids that lower the pH to about 4. Molds, fungi and bacteria cannot grow as long as air is excluded. Prevent rodents and other animals from access to the baleage so that the plastic is not damaged.

Making and storing hay is an expensive way to feed cattle. Proper storage can keep much of the nutrition in the hay that you made until you need it to feed your livestock.

Our Mission at North Carolina Cooperative Extension

The North Carolina Cooperative Extension Service partners with communities to deliver education and technology that enrich the lives, land and economy of North Carolinians. So contact your local office and talk with your livestock agent about any production questions or concerns you might have. We are here to help!