Understanding Wet Hay

By John McGregor, MFGA Extension Support

Untimely rains across Manitoba this year has made harvesting and baling of hay a real challenge. The timing of the rains can make it difficult for a cattleman trying hard to put up quality baled hay for this winter's feed supply. All producers that harvest hay occasionally will put up hay that gets wet from time to time. Therefore, ranchers and hay farmers need to understand the impact of "wet hay" in the tightly wound bales.

Extra moisture in hay can cause heat inside the hay bale or stack. To understand solutions to heating and storage problems from wet hay, it is necessary to understand the cause of heating.

When hay is baled at the proper moisture content, a limited amount of fungi can grow in the bale and the forage will continue to respire for a short period of time. These microorganisms and respiration increase the temperature of the bale slightly, remove a small amount of moisture and serve to stabilize the bale at around 15 percent moisture. This heating is minor and rarely causes the hay temperature to exceed 43 ºC

Hay with a little extra moisture may not exceed 50 ºC, whereas, wetter hay can quickly exceed 65 ºC. If the hay rises above 77 ºC, chemical reactions can begin to occur that produce enough heat to quickly raise the temperature above 200 ºC. In these cases heat builds up to a point that allows combustion and barn fires. Even if many of the harmful effects of heat in wet hay are avoided, spores produced by the mold increase hay dustiness and affects palatability.

Moisture ranges (%)	**Comments**
Less than 10	Too dry. Hay may be brittle and dusty
10 - 15	Recommended moisture range. Minimal risk of fire
16 - 20	Could mold. Slight risk of fire hazard
21 -25	Will likely mold. Moderate risk of fire hazard
Greater than 25	Severe heat damage likely. High risk of fire hazard

Heat damage causes hay to be less digestible, especially the protein. When hay is baled too wet, the microorganisms have adequate moisture available to reproduce and

thrive. These fungi digest sugars and cause an excessive amount of heat production which can break down protein or caramelize protein and sugars into a form that is unavailable to animals. Protein breakdown begins to occur at 50ºC and caramelization begins around 60ºC. Heat damaged hay often turns a brownish color and has a caramel odor. Cattle often readily eat this hay, but because of the heat damage, its nutritional value might be quite low. Some producers have reported that “the cows ate the hay like there was no tomorrow, but they did very poorly on the hay”.

Waiting for a stretch of days with no rain in the forecast, using methods that speed the drying of hay, adding preservatives or putting hay up as baleage or silage are some potential solutions to reduce wet hay.

If it is impossible to implement these techniques, wait for sunny baling weather. Rain damage will likely not be as severe as mold or heat damage and the risk of fire should be eliminated

For more information go to

High Quality Hay Management