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 FOR IMMEDIATE RELEASE
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Hay and Straw Barn Fires a Real Danger

Usually, we think of water and moisture as a way to put a fire out, but the opposite is true with hay and straw, which when too wet can heat and spontaneously combust. Most years this is more common with hay than straw because there is more plant cell respiration in the hay. This year the wheat is at various growth stages and straw seem to have more green stems than normal. When baled at moistures over 20% mesophilic bacteria release heat-causing temperatures to rise between 130°F and 140°F. These bacteria cause the internal temperature of hay bales to escalate, and can stay warm for up to 40 days depending on the moisture content when baled. If bacteria die and the bales cool, you are in the clear but if thermophilic bacteria take over temperatures can rise to over 175°F.

Assessing the Fire risk

- Most hay fires occur within the first six weeks after baling
- Was the field evenly dry or did it have wet spots
- Were moistures levels kept at 20% or less
- If over 20% was hay preservative used

Monitoring at risk Hay

If you are concerned that your hay or straw may be a fire risk because it was baled at a high moisture, you should monitor it twice a day for the first six weeks after baling or until low temperatures stabilize. Ideally, temperatures are taken from the center of the stack or down about 8 feet in large stacks. If you have a long probe thermometer it can be used but some homemade options are available A ¾ inch pipe with the ends closed into a point and 3/16 inch holes drilled in the bottom 4 inches can work well, lower a thermometer on a string or the sensor wire of a thermometer into the pipe. The sensor on a long wire can work very well once in place you can read temperatures without removing it. Leave the thermometer in the stack for 15 minutes to get an accurate reading. Another more crude option is to stick a 3/8 pipe into the stack and pull out twice a day if the pipe is too hot to hold in your hand, you are at risk for a fire. For more information on building your own temperature probe visit https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1115&context=ky_alfalfa. Be very cautious when taking hay temperatures if the hay gets hot and a cavity burns out underneath you can fall in. Use planks to spread out your weight and have someone nearby in case you fall in a burned out pocket or between bales using a harness and tying yourself off would be even better.



Critical Temperatures and Actions to Take

Temperatures (°F)	Condition and Action
125	No Action Needed
150	Hay is entering the danger zone. Check twice daily. Disassemble stacked hay bales to promote air circulation to cool the hay outside.
160	Hay has reached the danger zone. Check hay temperature every couple of hours. Disassemble stacked hay to promote air circulation to cool hay have fire department present while unstacking from here on.
175	Hot pockets are likely. Alert fire service to the possible hay fire incident. Close barns tightly to eliminate oxygen
190	With the assistance of the fire service, remove hot hay. Be aware the bales may burst into flames keep tractors wet
200 +	With the assistance of the fire service, remove hot hay. Most likely, a fire will occur. Keep tractors wet and fire hose lines charged in the barn and along the route of where bales are to be stacked.

Critical Temperatures and Actions to Take

If you are in the risk zone and there is machinery or livestock, also in the barn remove them before removing the hay for safety. Also, call the fire department when you are in the risk range they would much rather be present and not have to put a fire out then have to call mutual aid when your entire barn is on fire. For more information on Preventing Fires in Baled hay and straw visit- <http://articles.extension.org/pages/66577/preventing-fires-in-baled-hay-and-straw>.

Prevention of Bale fires starts at Baling

- Bale under appropriate conditions to prevent spontaneous combustion. Recommended moisture levels for safe baling of dry hay are as follows:

Small rectangular bales	Less than 20% moisture
Large round bales	15-18% moisture
Large rectangular bales	13-15% moisture

Moisture of bales

- Fresh cut hay will usually require several days of curing in the field under Ohio conditions to reach the safe moisture levels prior to baling.
- Using hay tedders, windrow inverters, hay rakes, and conditioning mowers help decrease the moisture content before the hay is baled.
- When baling high moisture hay fields, adjust the volume of the bale to be at a lower density to improve air circulation within the bale.
- Hay preservatives can be applied during baling to high moisture hay. Liquid products like liquid propionic acid inhibit the growth of bacteria. The effectiveness of preservatives is generally good up to 25% moisture, variably effective at 25-30% moisture, and no preservative is very effective above 30% moisture.

For more details on how to maximize field curing for forage harvest, see <https://forages.osu.edu/news/how-speed-hay-drying>.

Proper storage

- When stacking and storing high moisture hay, allow for more ventilation and air flow around the bales. Good air flow will help the bales return to a normal (ambient) temperature.
- Keep bale stacks low when storing inside a barn.
- Provide wider spacings between stacks when storing outside.
- Keep bales protected from excess ground moisture by storing them on gravel, pallets, used tires or other mechanisms to allow air flow.

This appeared in this week's CORN newsletter and was revised from a previous CORN newsletter. Go to <http://corn.osu.edu> Article summary of: Preventing fires in baled hay and straw. (2012). Farm and Ranch eXtension in Safety and Health (FReSH) Community of Practice. Retrieved from <http://www.extension.org/pages/66577/preventing-fires-in-baled-hay-and-straw>.

Adams County Farmer's Market

The Adams County Farmer's Market is open for business every Saturday Morning for the coming weeks. The market is set up on the west side of the Adams County Courthouse in West Union starting at 9:00 a.m. and is open until 1:00 p.m. Anna Adams at the OSU Extension Office is a contact for more information about the market. The OSU Extension Office phone number is 544-2339.

Dates to Remember

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| August 6 | Adams County Farm Bureau and Soil and Water Annual Meeting |
| August 22 | Beef and Forage Field Night at OARDC in Jackson at 5:00 p.m. |