

Wet spring increases risk of barn fires caused by hot, moist hay

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(PhysOrg.com) -- This year's unusually wet spring and early summer has led many farmers to store hay that's wetter than normal, increasing the danger of barn fires, according to an expert in Penn State's College of Agricultural Sciences.

"Often, farmers have reported that they know the hay they are baling is wetter than they'd like, but with additional rain in the forecast, they are taking a chance, hoping to save a better-quality product versus letting the rain cause the crop to deteriorate in the field," said Davis Hill, senior extension associate and director of the Managing Agricultural Emergencies program. "We have seen an increase in barn fires during the past few weeks, at least some of which were caused by hot hay igniting through spontaneous combustion."

Most farmers strive to bale hay that is field-dried to 20 percent moisture or less, Hill explained. At this moisture level, the baled hay can cure properly and maintain quality. This year, some have had to bale their hay at 25 percent moisture. With a moisture content that high, hay in storage will generate more heat than can be safely dissipated into the atmosphere.

"As temperatures rise, dangers of spontaneous combustion increase," Hill said. "Farmers need to be diligent in checking their hay, especially if they know they baled hay that was wetter than normal. Smoldering hay gives off a strong, pungent odor. This odor is an indication that a [fire](#) is occurring. If even the slightest smell is present, farmers should attempt

to take temperature readings of the stack."

Reaching inside a hay stack will give a cursory clue, Hill noted. "If it feels warm or hot to the touch, that's a good indication that problems may exist," he said. "Taking temperature readings of the stack is most important and the only real way of determining how bad the potential fire problem is before flames arrive."

Infrared thermometers and digital thermometers are accurate, and local fire companies may be willing to come out with [thermal imaging](#) cameras to evaluate a situation, Hill said.

"Most would prefer to come out prior to an actual fire event as a way to help avoid a catastrophic fire," he said. "A number of fire companies and silo-fire experts also have probes available that producers can borrow to help them monitor a stack of hay."

Research and experience suggest that farmers and firefighters should be aware of several critical temperature points. Between 150 and 174 degrees Fahrenheit, a hay stack is entering the danger zone.

Temperatures should be checked twice daily, and if possible the stack should be disassembled to allow more air to cool it. At 175 degrees Fahrenheit, hot spots and pockets of fire are likely. Stop all air movement around the hay and alert a fire service to a possible hay fire incident. At 190 degrees, remove the hot hay with the assistance of a fire service -- be prepared for the hay to burst into flames as it contacts the air. At 200 degrees or higher, a fire is almost certain to develop. Call a fire service and have the hay removed -- again, expect the hay to burn as it contacts fresh air.

"Keeping a watchful eye on heating hay can save your barn or storage building," Hill said. "Checking the temperature of (your) hay can help you make critical decisions. If you see the temperature rising toward the

150 degree mark, you might consider moving the hay to a remote location, away from any buildings or combustible material."

"If you have to have a hay fire, it's better to have it away from your main hay storage or barn. Use caution when moving heated bales, because they can burst into flames when they are exposed to fresh air. Wetting hot bales down before moving them can help control this hazard."

Provided by Pennsylvania State University ([news](#) : [web](#))

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