

# MAFES Dawg Tracks



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Preventing Hay Fires



MISSISSIPPI STATE  
UNIVERSITY

A heads up with some tips for hay safety is never a waste of time. In fact, if this newsletter is read and distributed to everyone involved with hay production, it might just save some hay, a barn, and maybe an injury to an individual.

## WHAT CAUSES HAYSTACK FIRES?

- Sparks from machinery or other equipment.
- Embers from bushfires, nearby burn off and lightning strikes.
- Self ignition from self generated heat through spontaneous combustion (this is the most common cause of hay fires).

Hay doesn't have to be stacked to result in a fire. Certain conditions can cause a single bale to ignite, which can result in spreading to other areas and materials causing thousands of dollars in damages.

## WHY DOES HAY HEAT?

Green hay can have moisture inside, and if this moisture content inside is too high, a biological and chemical process can cause the hay to heat. This is because the material is still alive, allowing microorganisms like bacteria and fungi to grow in the moist environment. These processes alone, or in combination, generate heat and may result in the loss of dry matter, nutritional value, and reduced palatability.

If the heating remains undetected and the stack isn't pulled apart to allow the heat and moisture to escape the bale, the temperature will keep rising. If the temperature reaches 70 degrees C, spontaneous combustion may occur. If the temperature reaches 170 degrees C, spontaneous combustion can happen within two weeks of baling and up to three months afterwards.

## SIGNS OF HEATING HAY

New or freshly baled hay, even if it has been allowed to season, should be monitored with a probe or a long metal bar protruding down into the bale. Depending upon the length of the probe or bar will tell you how deep inside the bale that you can detect temperatures. Other signs of heating include:

- Steam rising from haystacks
- Condensation or corrosion under hayshed roofing
- Mold growth on or in the bales
- Unusual odors (burning, musty, pipe tobacco or caramel)
- Slumping in sections of the haystack

## MINIMIZING THE RISK OF HAYSTACK FIRES

- Make sure that the hay is fully cured (dead and dry) and at the recommended moisture content before baling. It is important to remember that one damp bale is enough to ignite an entire stack, meaning that care should be taken to protect all the bales from the rain, leaking roofs, runoff or downspouts. Obviously, if damp bales are detected, isolate them and check them very closely.

- Make sure that the stacks are limited in size and have enough airflow to let the heat and moisture escape.

If you are purchasing hay from an outside source, be sure to verify the moisture and other factors about the purchase.

- Hay storage should be isolated from chemical, fuel storages, workshops and roadsides and away from areas with vegetation that could cause ignition.
- Be careful when using any type of machinery around haystacks, especially during days of high fire danger.
- Store hay a sufficient distance away from power lines. If hay should ignite under a power line, it could cause an area power outage.

## PROTECTING YOUR ASSETS

- Store hay in multiple locations. This way if you should have a fire, your entire product won't be lost.
- Store hay away from your fixed assets like barns, workshops, homes, and equipment.
- Create and maintain fuel breaks around your haystacks. The wider the break, the more useful it will be in stopping the fire to spread to other areas or to other areas of hay stacks.

## SOLUTION FOR HEATING HAY

- If you see signs of the hay heating up, pull the stack apart to improve air flow and to allow the bales to cool down.
- You should be aware that hot hay might ignite when you pull it apart. If any of the stacks are above 70 degrees C., or if you see or smell smoke, call 911 and ask for immediate help.
- Don't walk across hay that may be heating. There could be a cave in and you would be trapped and also the rush of air in the charred area could cause a flare up.

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