



Preventing hayshed fires

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Hayshed fires in the region over the summer highlight the dangers of storing hay that is too moist. With large volumes of hay being made and stored on farms due to the drought, producers and buyers need to be aware of the importance of baling and storing hay at the right moisture content.

Spontaneous combustion of hay can occur any time from a few days to several months after stacking. Note that dry silage (around 40% DM) can also heat and ignite if too much oxygen is present.

What causes the fires?

Plant respiration and microbial activity in moist hay cause it to heat. If the heated hay is on the outside of the stack the heat can dissipate. But if the heat is inside, especially in large dense hay bales, heating may continue.

Both moisture and oxygen are needed for ignition. If the hay is well dried microbial activity will cease; if too wet, not enough oxygen can get into the hay, and no fires will occur. Partially cured hay (12–21% moisture) is the most prone to fire.

Once the temperature of the hay reaches 70°C, different micro-organisms take over and can quickly raise the temperature ignition point (200–280°C). If the heat is trapped in the stack, the hay will smoulder and the slightest introduction of oxygen will ignite the hay.

Preventing fires

Producers should aim to minimise the chances of spontaneous combustion. Best management practices are required at several stages of the hay making operation.

Raking and baling

- Rake and dry hay as evenly as possible to avoid wet spots
- Bale at the right moisture content
 - small bales at 18–20% moisture
 - large round bales at 14–18%
 - large square bales less than 14%
- Use field moisture tests and moisture meters, and check the moisture of stem nodes which can lift the overall moisture of the stack.

Stacking and storage

- Don't stack hay in sheds unless it is properly cured (especially large square bales).
- Store hay in different lots in the shed and check the moisture of each separately – headlands baled first are considered higher risk and should be stored separately

or on the outside of the hay stack.

- Use shed layouts that provide adequate air flow through the stack and good ventilation at the top to dissipate heat.
- Repair any leaks in the shed roof to avoid a layer of moisture forming across the top of a stack that keeps heat in.

Monitoring

- Monitor hay sheds for heating – insert a crowbar into the stack and feel it regularly.
 - **If the bar is too hot to hold or if you find a hay bale with dark brown parts, smelling like tobacco, it is ready to ignite.**
- If the temperature of the stack continues to rise pull it apart carefully. Be aware that bales that have reached the critical temperature may ignite as they are exposed to air.
 - **Always keep water and fire fighting equipment on hand.**
- Never walk on top of heating hay stacks. Smouldering bales could collapse and if you fall in, the accompanying air could ignite the stack. ☠

Further information

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Figure 1: Best management practices are required at several stages of the hay making operation to avoid spontaneous combustion.