Preventing haystack fires

A guide for farmers

What causes haystack fires?

Haystack fires have a range of causes, such as sparks from machinery and equipment, embers from nearby burn-offs, or bushfires and lightning strikes. Hay can also self-ignite when excessive heat builds up. This is called spontaneous combustion, or spontaneous ignition, and is the leading cause of haystack fires in Victoria. Haystack fires can happen in any type of bale stored in a haystack. Even hay stored as single bales can spontaneously ignite under some conditions. Haystack fires can spread quickly into the surrounding area and often result in thousands of dollars of damages.

Why does hay heat?

If hay is too ‘green’ (the internal plant moisture content is too high) or if some of the hay becomes damp before, during or after baling, a complex series of biological and chemical processes may cause the hay to heat. This is because the plant material is still alive and using energy (respiration) and that microorganisms, such as bacteria and fungi, are able to grow in the moist environment. These processes, alone or in combination, generate heat which may result in the loss of dry matter, nutritive value, and reduced palatability.

Signs of heating hay

Regularly monitor all haystacks for signs that the hay is heating by using a temperature probe or a crowbar, although this will not detect heat deeper in the stack. Other signs of heating include:
- steam rising from haystacks
- condensation or corrosion under hayshed roofing
- mould growth in or on bales
- unusual odours (burning, musty, pipe tobacco or caramel)
- slumping in sections of haystack.

Minimising the risk

Make sure hay is fully cured (dead and dry) and at the recommended moisture content before baling. The recommended moisture content will vary depending on the type of crop and bale being used. Use a correctly calibrated moisture meter to check hay moisture levels throughout the baling process. Be sure to test plant nodes and heads inside leaf sheaths for...
Be aware that very hot hay may suddenly catch alight if it is pulled apart. If any part of the stack is near or above 70˚C or you see or smell smoke, you should call Triple Zero (000) immediately and ask for assistance from CFA.

Do not walk across hay that may be heating. Charred bales inside the stack may suddenly collapse and result in entrapment, and the rush of air may result in a sudden flare-up.

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Key things to remember

- Ensure hay is fully cured before baling.
- Bale and store each bale type at the correct moisture level.
- Know the history of hay that you purchase, particularly its moisture content.
- Protect hay from rain, leaking roofs and spouts, and runoff.
- Store hay in a number of different locations around your farm, away from key assets. Limit the size of stacks to reduce the risk of losing all of your hay.
- Do not store vehicles, machinery and equipment in your hayshed.
- Be careful when operating vehicles, machinery and equipment near your haystacks.
- Create and maintain fuel breaks around your haystacks.
- Regularly monitor stored hay for signs of heating.
- It only takes one heating hay bale to ignite a whole haystack.

Further information

Agriculture Victoria
agriculture.vic.gov.au

Australian Fodder Industry Association
afia.org.au

Knowledge, Patience and Experience: The Cure for Quality Hay
(Technical Notes, AFIA 2008)

Country Fire Authority
cfa.vic.gov.au

Contact

CFA Community Safety (03) 9262 8444 or cfa.vic.gov.au

VicEmergency Hotline 1800 226 226 (or via National Relay Service on 1800 555 677) if you are hearing impaired).

Translating and Interpreting Service for translated information from VicEmergency call 131 450.

Dial 000 if you see smoke, flame or embers.