Department of Primary Industries and Regional Development
GOVERNMENT OF WESTERN AUSTRALIA

Protect Grow Innovate

Management of hay residues to reduce stable fly breeding

What are stable flies and what harm do they cause?

Stable fly *(Stomoxys calcitrans)* is a serious pest of livestock, particularly horses and cattle on the Swan Coastal Plain. It has a painful bite that causes pain and distress to people, pets and grazing animals. It can also be a vector for disease.

Livestock owners may not be aware that hay residues including straw bedding and silage can become a major breeding site for stable fly. If residues are not properly managed, this can lead to infestations of the biting stable fly, affecting your animals and others nearby.

As few as 20 stable flies can cause distress to animals, preventing them from feeding, drinking, and caring for their young. Animals try to prevent an attack by kicking and biting at the flies, tossing their head, rolling, immersing in water or bunching in a herd. Ongoing exposure to infestations can lead to dehydration, overheating, weight loss, and sometimes death.

Under the *Biosecurity and Agriculture Management Act* 2007 (BAM), landholders in areas where stable fly is a declared pest (see note[1]) have a legal obligation to use the prescribed control measures in the 2019 Stable Fly Management Plan to actively reduce and prevent stable fly breeding on their property.

The 2019 Stable Fly Management Plan contains successful prescribed control measures modelled on Integrated Pest Management (IPM) strategies, throughout the year, but particularly throughout the cooler months around May to August.

Why are hay residues a problem?

Hay, straw and silage are classified as **high-risk** substrates for stable fly breeding because it breaks down slowly.

Just one roll of wet, trampled hay left in contact with the soil can become a breeding ground for several thousand stable flies.

Residues already infested with eggs, larvae and pupae require special treatment.

Photo: Stable fly larvae, hatched from eggs. Female flies can lay several hundred eggs in 1 m² of rotting hay residue.

IPM strategies for effective management

Best-practice of feeding hay and management of hay residue greatly reduces the number of adult flies emerging in spring.

Best practice for feeding hay

Reducing the amount of hay residue will significantly limit where stable flies can breed.

Best practice: Feed-out on a hard surface to avoid contact with the soil.

Second best: Spread hay thinly in the paddock, rather than leave as a whole roll in one area.

Third option: Use a hay ring or hay net.

Weekly clean up and appropriate disposal is essential for success.

[1] Cities of Armadale, Swan, Kalamunda and Wanneroo and the Shires of Capel, Chittering, Gingin, Dandaragan, Harvey and Serpentine–Jarrahdale, the portion of the Shire of Murray described as the Peel-Harvey Coastal Plain Catchment - State Planning Policy No. 2.1, and Victoria Plains

Using straw as bedding?

- Apply cyromazine granules[3] under straw bedding to prevent larval growth.

What to do with hay residues?

A. If hay is **dry and** there are **no signs of stable fly eggs, larvae or pupae:**

- shred or chop the hay into smaller pieces, then spread out thinly then leave in sun to desiccate

or

- add to compost

or

- bury in pits to a depth of 1 metre (see note[2]).

B. Hay that is **infested with stable fly eggs, larvae or pupae —** spreading out thinly will **not kill** the eggs/larvae/pupae. To control**:**

1. collect into a heap/mound **then**
    - use an approved insecticide[3] that leaves a chemical residue/barrier that adult flies contact when emerging from pupae
    - leave undisturbed for 2 weeks.

      Note: Care should be taken in allowing animals access because:
        - of withholding periods (WHPs) prior to animals being sold
        - if hay is sprayed to form a barrier, cattle may trample the hay and break the barrier, allowing flies to escape through the insecticide layer.

or

2. Cover and seal with plastic and leave in the sun for 2 weeks or until the eggs, larvae and pupae are dead.

Once eggs, larvae and pupae are dead, dispose the residue by following disposal methods in **A**.

Proactive management in cooler months to reduce breeding population

Targeting key breeding sites (hay residues and aged manure) during cooler months can significantly lower the numbers of adult breeding flies emerging in the warmer weather.

Stable fly development slows in the cooler months due to reduced air and soil temperatures. For example, when ambient temperatures average 15 to 18°C, larvae development can take up to 7 weeks compared to 2 weeks at 32°C.

How to check for stable fly eggs and larvae

Stable fly eggs are mostly off-white about 1 mm in length and often scattered in little groups of 10 to 20 eggs. They may be difficult to see, so look for the larvae mixed in amongst the rotting hay and soil.

1. Select a portion of hay from the outer section of a pile that is in contact with the soil, but not too thick.
2. Carefully peel away the layers of hay and dirt until just before the soil surface. This is where the larvae are likely to be found.
3. Scrape away at the surface and watch for off-white to light brown larvae about 2 to 3 mm long. When exposed to light, the natural reaction of the larvae is to move away or feign death for a short time if picked up.
4. Follow steps A or B as above.

dpird.wa.gov.au/stablefly

Email: stablefly@dpird.wa.gov.au

[2] Deep burial of large volumes of waste material may have environmental consequences. If you are considering this means of disposal contact relevant government bodies for advice.
[3] apvma.gov.au