

FORAGE & BEDDING QUALITY

STEPS TO TAKE IN ORDER TO PREVENT RESPIRATORY DISEASE AFTER A POOR HARVEST

I don't want to sound alarmist because I am generally a very positive person, but I have no doubt that there will be an increase in racehorse respiratory issues this winter and next spring due to a combination of poor hay and straw harvests in conjunction with a very damp autumn.

Through our everyday testing at the Irish Equine Centre we have already seen higher than average fungal contaminated hay, haylage and straw submitted for testing this autumn. Our routine monitoring of racing yard environments in Ireland, the UK and France are also showing increases in fungal contamination in air samples and surface swabs taken throughout the yards. The damp weather conditions from the second week of June right through the summer in western Europe resulted in fields of grass and cereal crops which were showing major signs of fungal contamination while still standing in the field.

It didn't get much better when the dry spells came in early September. Land was already saturated which meant the crops once mowed were extremely difficult to dry which has resulted in discoloured, dusty, high moisture straw, many hay stacks which heated and oats with high moisture content. Even haylage, which is the normal go to method of preserving forage when conditions are poor has

shown much higher levels of contamination thus far. Damp weather in this period also meant that stables themselves were often damp which encouraged fungal growth on the internal surfaces.

Racehorses are athletes that need a fully functioning respiratory system to maximise performance. IAD, COPD, RAO (all forms of equine asthma) and EIPH (bleeding) are respiratory conditions which are major causes of poor performance in racehorses. Fungi and mycotoxins are now recognised as a major cause of these conditions and in particular the pathogenic fungus *Aspergillus* being the main culprit.

Fungi that penetrate the airways can cause unwanted inflammation and can be infective, toxic, allergenic or all 3 combined. The further the distance a racehorse is asked to race, the more detrimental this inflammation will be to performance. The main sources of this fungus are in hay, haylage, straw and oats.

This fungus is a storage fungus and so it propagates in stored foodstuffs overtime where the moisture level is above 14%. When the fungus contaminates a foodstuff or bedding the horse has no choice but to breathe in the harmful spores in their stable environment. The fungus also causes a level of immunosuppression which can often be the precursor to secondary bacterial and viral disease.



Mould growing on the wall where haylage is opened.

The cost of bedding for racehorses has been steadily rising over the last number of years. Wood shavings have become very expensive to buy but are now also very expensive to dispose of. Straw is still more cost effective to buy and much more cost effective to dispose of.

I will often get asked the question “what is the best bedding for horses?” - my answer is consistently “good straw”. When I get asked the question “what is the worst bedding for horses?” my answer is consistently “bad straw”. The cost saving in purchasing and disposing of straw has made it attractive to trainers in a time when all other costs are rising. Finding good straw this year will be very difficult.

In many countries in Europe, we have a government policy called SIM, the Straw Incorporation Measure which is a payment for chopping straw and incorporating it into the soil. SIM has been designed to encourage tillage farmers to increase soil organic carbon levels by chopping and incorporating straw from cereal crops and oilseed rape.

Unfortunately, an unintended consequence of that policy is the reduction in availability of straw for bedding purposes. This is particularly problematic this year because now we have a shortage of straw and the straw which is available for bedding has much higher levels of harmful moulds due to the poor harvest conditions.

When feeding haylage, the spoilage process can begin quickly if the bale is exposed to air, this may be due to damage of the wrapping or not using the bale quick enough once opened. Fungal spores will develop and this should be carefully assessed before feeding. This is a major problem we encounter on a regular basis. Often trainers are feeding big bales of haylage to a small number of horses which means the bales are exposed to air for a prolonged period of time.





< Pathogenic fungi will develop very quickly and often lead to both respiratory and gastric problems. For that reason, the IEC will recommend to use haylage once opened inside of 4 days in the winter and 3 days in the summer. This recommendation will often determine the choice between hay and haylage as you would therefore need to be feeding a larger number of horses to feed large bale haylage.

Hay production requires 7-10 days of continuous good weather unless you are barn drying. In Ireland and the UK we got a two week spell of suitable weather in the last week of May until the end of the first week of June. Many meadows were not ready, and the ones that needed patience from the farmer not to bale too early as hay at that time of the year is very difficult to dry properly due to the lushness of the grass.

Having said all that, the best hay of this season was made in that period. That was the only spell until a two week spell in September. Historically, the best hay in western Europe is made from the middle of June to the end of July. That was not possible this season. The hay made in that early spell is very good in terms of quality but very poor in terms of volume. The hay made in the second spell in September was very high in volume but very poor in terms of quality. The nutrition levels of this September hay is also poor and the fungal levels are very high.

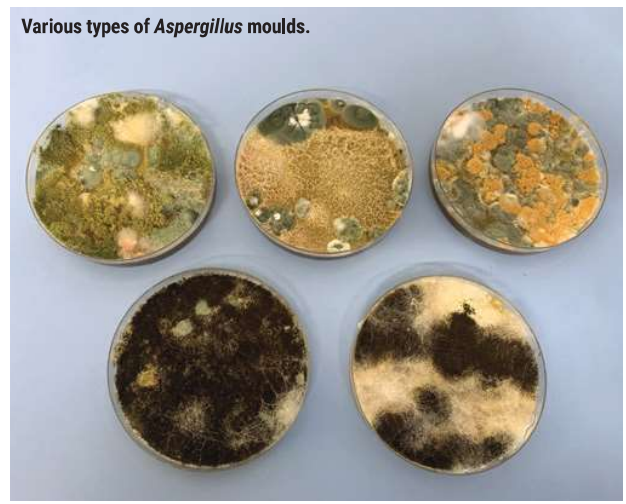
At the Irish Equine centre we analyse thousands of samples of hay, haylage, chaffs, straw and oats every year for both hygiene (mould and bacteria levels) and nutritional content. The reality is that in a normal year with good spells of weather we still get both hay and haylage with extremely good nutritional and hygiene values and we get hay and haylage with very poor nutritional and hygiene values.

This year the percentage of poor is outweighing the percentage of good. Normally we would advise that trainers should produce or purchase enough of the same batch of quality forage for the whole season. That may not be possible this year. It is our experience from testing forage that getting haylage with consistent nutritional values can be very difficult even in a good

year. This is mainly due to the variants in moisture content which will certainly be the case this season. Hay which is well made and stored well does tend to be much more consistent and therefore better for overall horse health.

Both hay and haylage are prone to fungal contamination in different ways. With haylage the fungal contamination occurs as a result of inadequate fermentation or when air pockets or punctures occur in the plastic.

Fungal problems in hay occur because of high moisture levels during the baling process and because of inadequate storage during winter months. We have shown in the past that those fungal problems are compounded and elevated since farmers have moved away from the traditional small bale and moved to large round and rectangular bales. Farmers who traditionally barn dry small square bales, who ensure that hay is dried below 14% moisture and then covered (a layer of clean bales of straw) in storage remains the most hygienic hay for racehorses.



< During storage the moisture level on the outside of uncovered bales significantly increases over damp winter months, leading to a significant increase in fungal growth. Round bales suffer the worst during storage. Hay in large bales needs to have a very low moisture level when baling, which just wasn't possible in most cases this year when field drying.

When this type of bale has a high moisture level in the centre of the bale it results in significant increases of pathogenic fungi contamination during storage. We have shown through studies that keeping the moisture level of hay below 14% moisture will significantly reduce *Aspergillus* contamination. It was very difficult to achieve this moisture reduction this summer and often farmers had no choice but to treat the hay with buffered propionic acid which is an effective preservation method which reduces fungal growth during the early stages of storage but its effect diminishes over time.

Good quality tested hay is still the most beneficial to horses when all factors are taken into account. Once purchased hay should be stored properly by the supplier to ensure that it remains consistent. The hay supplier should ideally guarantee the trainer a supply of hay which is consistent for the whole season rather than swapping and changing batches constantly.

All hay should be covered from the end of September once the moisture content has stabilised to protect it from damp air during winter months. Trainers with inadequate storage may have no choice than to feed haylage. If this is the case, buy the right size of bales for the amount of horses you are feeding.

Steaming of hay in the correct manner can be a very useful process to reduce the fungal load in contaminated hay. Some producers of hay harvested very early this year to take advantage of that good weather spell. First crop hay when harvested early can be difficult to save and can have a very high protein content. That high protein is good if you test it to quantify the actual protein content and you then balance your feeds accordingly.

Steaming hay can reduce the fungal load in contaminated hay.



If high protein hay or haylage is used and feeds are not adjusted accordingly it can overload the digestive system with nitrogen. Excess of protein will also lead to an over production of urea, leading to an excess of ammonia emissions in the stable which can also cause respiratory irritation.

So, what is the advice from the IEC? Trainers will need to test their hay and haylage at multiple stages during their season as the dangerous fungi will develop over time. The volume of suitable forage and bedding will be low, so trainers should act quickly to secure the best that's available.

The nutrition department at the IEC provides full nutritional and hygiene testing for hay, haylage, straw and oats. It is vital that you test forage pre-purchase when trying to buy a season's supply. Hay, haylage or bedding contaminated with pathogenic fungi will cause respiratory disease which will affect racehorse performance.

For that reason, the cost of testing forage is a small price to pay rather than losing significant portions of the season due to poor performance as a result of respiratory disease. How you store and feed hay, haylage, and oats will have a huge impact on the level of exposure your animals will have to harmful moulds. Stable hygiene and ventilation will be even more critically important when the risk of contaminated inputs is so high.

To conclude, trainers should always acquire the best possible forage and bedding available and test it prior to purchase. You can and should inspect and test any batch of hay or bedding properly prior to delivery. You can take a representative sample for the testing lab which can then be the deciding factor for your purchase. When taking a sample, take a fistful from 6-8 different bales in the stack to ensure you get a representative sample.

We monitor the stable environments of over 200 racing yards in Ireland, the UK, France and in the Middle East. That monitoring includes hygiene sampling of feed, forage, bedding, water, stable surfaces, walker surfaces and air quality in barns. The benefits of that monitoring for the trainer is that you highlight issues which can cause respiratory disease, proactively prevent disease problems and finally have a mechanism which quantifies the effectiveness of stable disinfection routines.

The most consistent trainers in terms of performance have good hygiene practices. If anybody would like to discuss the above issues or need help with assessing the quality of forage and bedding in use, please contact myself or any of my team at nutrition@irishequinecentre.ie and we would be glad to help. 📧