

Making best silage: Top 7 silage sins



When it comes to producing good quality, nutritious silage small things can make a big difference. This is especially true of mistakes. A shortcut or a small oversight can ultimately result in silage that is unusable due to insufficient dry matter content or worse, silage that is dangerous to herd health because of mould growth and the likely presence of mycotoxins or *Listeria*.

Many farmers have come to accept some issues, particularly with mould, as inevitable and as a necessary evil. The reality is however, it's all too often caused by someone committing one of a number of silage 'sins'. So what are these sins?



1. Leaving dead grass in the sward.

"Mould growth, particularly in silage bales, depends on two crucial contributory factors", says Dr. Dave Davies, a consultant at Silage Solutions Ltd and an expert in silage and rumen nutrition.

"Firstly, the harvested forage needs to be contaminated with mould spores prior to it being baled and secondly air - or more specifically oxygen - needs to have entered the bale after wrapping."

He continues: "Oxygen will always be present in baled forage but if a bale is wrapped correctly, it will be quickly used up through respiration either by the plant or by aerobic microorganisms present on the crop. Once it's been consumed, the wrap acts as an air barrier and will inhibit any further oxygen ingress."

"Moulds on the other hand are ubiquitous on farms and so it is impossible to completely remove all traces of contamination from the forage. That said, you still can and

should take steps to minimise their numbers and to reduce the risk."

The steps Dave is referring to start with your intended crop.

Any surplus grass at the end of the previous growing season must be removed completely, preferably by grazing or failing that, by topping. If left unchecked all this material does is die and subsequently provide nutrients to support the growth of moulds and other undesirable bacteria that will remain in the sward until harvest.

Removing this surplus grass helps to reduce the number of mould propagules in the harvested sward. Surplus grass has also been shown to reduce grass growth rates in the spring and so can reduce first cut grass yields.

2. Harvesting over mature grass

Another 'sin' which can increase the likelihood of silage being contaminated by moulds is harvesting over mature grass.

"Sometimes harvesting over mature

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grass is unavoidable because of the weather conditions or because you require a mature low D value forage for feeding certain classes of stock such as dry Suckler cows or if farmers are participating in environmental management schemes.” explains Dave. “However more often than not, this practice is carried out because farmers are looking to increase crop yield despite the trade off in forage quality. “The problem with this is that as forage matures and the seed sets, the vegetative parts of the crop like the stems and the leaves begin to die and become increasingly vulnerable to invasion by fungal pathogens. These pathogens, which are not necessarily visible to the naked eye, will in turn enable many non pathogenic fungi to establish themselves in the forage creating a high overall load of fungal propagules.”

Aside from this risk of increasing the silage’s mould population, farmers also need to be aware of another potential hazard when using over mature grass. Namely, that this type of forage tends to have stalky stems which are more likely to puncture the wrap and allow air ingress. As such, if you are producing silage bales from this material, it’s always worth considering wrapping with 8 layers of film if you don’t already do so.

3. Leaving cut grass in a narrow swath to wilt

If you want to reduce the likelihood of mould contamination within your silage, avoid leaving your cut grass in a thick narrow swath.

Such swathes encourage mould growth because their density results in higher temperatures and humidity levels, both of which enable bacteria to thrive. In addition, thick swathes reduce the effectiveness of the wind in helping to dry the crop out.

As a rule of thumb, you should aim to spread your grass over 80 to 100% of the original harvested area (depending on ground conditions) and as soon as possible after mowing and certainly within two hours.

Doing so will promote rapid wilting and will also enable the sun to play a more active role in mould control. We all know the effects Ultra Violet radiation can have in terms of sun burn and skin cancer. Well, it’s just as potent when it comes to killing undesirable bacteria and moulds in the swath.

4. Wrapping in the field

“All of the sins mentioned so far relate to things farmers should do to inhibit the presence of mould propagules in their silage bales” says Dave. “The other common mistakes are more to do with preventing oxygen ingress so that any mould that is present cannot grow.”

“The first of these mistakes is wrapping bales in the field. Admittedly, the advice has always been and always will be to wrap bales as quickly as possible and wrapping in the field would appear to facilitate this however doing so can present other hazards.”

“Firstly dropping a well wrapped bale on to the recently cut sward presents the very real risk of holes being punctured into the wrap either by stubble or by stones. When that

wrapped bale is then picked up and moved to the stacking site, this damage can be exacerbated.”

The advent of combi-machines in recent years means that some farmers will wrap in the field but Dave would advise that those doing so should check bales carefully for damage from stubble.

“If any damage goes unnoticed, oxygen will have unfettered access to the silage for the entire storage period enabling mould to flourish. This applies even if the holes are miniscule. Holes caused by stubble may be small. But rest assured, oxygen is smaller!”

5. Moving bales after wrapping

In line with best practice advice, it’s always recommended that you move bales as quickly as possible after wrapping. This ideally means within 2 hours but where this isn’t practical, you should certainly aim to move them within 8 hours. Once at the storage site, the bales should then be left in place until they’re ready to be fed out.

“Many farmers understand that moving a bale once fermentation is underway means a greater likelihood of damaging the wrap and of opening up the seals between layers of film enabling oxygen to enter” points out Dave.



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“As such, they leave them alone for 2 weeks. However even if you move them after this time there is a significant risk of facilitating oxygen ingress.

“That’s because the bale is most likely moved with a bale grab which in effect squeezes the bale as it’s picked up. This squeezing action forces the CO² in the bale out and creates a potential vacuum. Once the bale is placed in its new resting place and the grab is released, the bale returns to its original shape with the vacuum drawing in unwanted air and oxygen which will ultimately feed mould growth.”

6. Spiking a bale whether it’s wrapped or not

Thankfully, most of us know better than to spike a wrapped bale. However many farmers think it’s OK to spike an unwrapped bale in order to move it to the wrapper. Dave Davies says these farmers need to think again.

“When you produce a bale, you’re creating a densely packed mass of forage where much of the oxygen has already been squeezed out. Once you spike it though, you’re undoing all your hard work. Not only does the central spike hole allow oxygen back in but you’ll also create lots of concentric holes around this as you move the bale, all of them having the same negative effect. It’s a lot like ripples in a pond.

“Ultimately, this introduces so much oxygen that moulds are able to grow before the oxygen is used up after the bale has been wrapped.



“As for spiking a wrapped bale? That really is the ultimate sin. You’re deliberately puncturing a film that has probably been developed and refined over the past 25 years to provide the perfect oxygen barrier and to be as thin and cost effective as possible. Any patch used over the resulting hole will never provide the same degree of oxygen protection as the original undamaged film irrespective of how well it is applied.

“In short, it’s always better to use a grab whenever you’re moving bales – wrapped or not.”

7. Not netting the bales to protect from bird and vermin damage

Having spent the time, effort and energy creating baled silage, it’s hard to imagine that farmers are prepared to needlessly squander the fruits of their labours. But many do every year. Our final sin is one of the simplest of all to avoid and entails not placing a net over your bales to protect them from bird or vermin damage.

These creatures don’t care that your balewrap is there to provide an air barrier and will puncture it either with their feet whilst using the bales as a resting place or with their teeth or beak because they see the film as an obstacle between them and a potential source of food. And it’s not just wild animals you need to worry about either, even the claws of your neighbour’s cat can have the same negative effect.

For many, Dr. Davies’ advice will reflect their current balewrapping practices. But for others it will hopefully be an insight into the seven silage sins that they can avoid now, rather than regret later.

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