Surveys suggest role for greater focus on silage preservation

Silage is one of the most cost-effective feeds available for dairy cows. But there is room for improving the way it is made, according to survey results from Volac, the makers of Ecosyl silage additives.

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Silage is a highly cost-effective feed. So, for dairy farms looking to minimise costs and maximise output, producing the best possible silage makes a lot of sense.

Moreover, making silage is nothing new. So, you would think, by now, everyone involved in silage-making would know how to make top-quality material.

But is this the case? Results suggest not. In our most recent survey conducted among more than 100 UK dairy farmers, a massive 78% thought they could make better grass silage. Most producers simply did not feel in full control of the process.

Just 19% of respondents said they felt completely in control of how well their grass silage turns out once they had sealed the clamp – with 85% in a further question saying they would like to feel more in control. When we dug deeper, we found some concerning gaps in the silage-making methods being used.

Efficient fermentation

Although 90% of respondents said they rolled continuously when consolidating silage in the clamp – which is important for squeezing out air to achieve an efficient fermentation and minimise aerobic spoilage – only 38% said they normally filled the clamp in layers no more than 15cm thick. This is significant because 15cm is the maximum forage depth that can be consolidated effectively.

Also, only 17% said they achieved a grass dry matter density of 250kg per cubic mete when consolidating, which is the optimum for grass at 30% dry matter.

Worryingly, the process of fermentation seemed to be poorly understood. Only half of respondents realised that crop dry matter at harvest has a big impact on grass silage fermentation.

Science tells us that, during fermentation, beneficial bacteria convert crop sugars into acids, which pickle the forage. Yet only a fifth (21%) of respondents recognised fermentation was a process whereby forage is pickled in acid.

Some 28% of respondents also thought a good silage fermentation was largely dependent on the bacteria naturally present on grass.

It is perhaps not surprising, therefore, that many producers did not feel completely in control of how well their grass silage turned out.

Beneficial bacteria

While there will almost certainly be some beneficial bacteria naturally present on grass, if you rely solely on these, you do not know if they are present in sufficient numbers. Nor, indeed, if they are the best type to carry out a fast and efficient fermentation, needed for optimum nutrient preservation.

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Results from Ecosyl grass silage survey of UK dairy farmers

Do you think you can make better grass silage?	Yes	78.23%
	No	0%
	No, I think I already make the best grass silage I can	14.52%
	Do not know	7.26%

Which of the following do you do when consolidating grass in your clamp?	Fill the clamp in layers no more than 15cm thick	38.26%
	Achieve a grass density of 250kg dry matter per cubic metre	17.39%
	Roll continuously	89.57%
	Other	2.61%

How important is maize silage in helping to maximise milk from forage?	Extremely important	50.00%
	Very important	33.82%
	Fairly important	16.18%
	Not important	0%

What is the biggest challenge you face when preserving maize silage?	Achieving a good fermentation	32.35%
	Preventing aerobic spoilage	70.59%
	Other	2.94%

Which methods do you use to minimise aerobic spoilage of maize silage?	A narrow clamp	38.24%
	Fast filling	32.35%
	Filling in thin layers	35.29%
	Good consolidation	60.29%
	Tight sealing	75.00%
	Moving the face back quickly at feedout	30.88%
	Using a block cutter or shear grab to keep face tidy	54.41%
	Keep the sheet off silage face at feedout	27.94%
	Use of an additive	54.41%

Results from Ecosyl maize silage survey of UK dairy farmers

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There may also be unwanted microbes present – such as enterobacteria, clostridia, yeasts and moulds – which can result in poor fermentation, spoilage and wasted nutrients.

By comparison, we know that a quality silage additive can apply as many as one million beneficial bacteria per gram of forage treated, when used correctly.

More to the point, these bacteria will have been specially selected to be highly efficient at fermentation. And the follow-on benefits of adding these beneficial bacteria can be substantial.

They include reduced dry matter losses, improved silage ME and improved digestibility. Most importantly, we have seen clear improvements in milk yield.

Across a range of forages, milk yield was increased by an average of an extra 1.2l/cow/day in trials using Lactobacillus plantarum MTD/1 – the bacterium in various Ecosyl products.

If anything provides a compelling reason for including an additive in silage-making, improved milk yield should. A proven additive represents a small investment for a lot of additional peace-of-mind.

Preserving maize

However, it is not just when making grass silage that there seems to be room for improvement. An earlier survey we conducted among 70 UK dairy farmers suggested similar results for maize.

While 71% of respondents rated preventing aerobic spoilage as the biggest challenge faced when preserving maize silage, not all respondents were fully utilising all the available preventative methods.

Only 60% said they used good consolidation. And while three quarters (75%) said they used tight sealing, only a third (32%) used fast filling of the clamp or filling in thin layers (35%). Yet we know that all these steps are vital for minimising air in the clamp, and therefore minimising spoilage organisms.

Similarly at feedout, only around half (54%) of respondents were using a block cutter or shear grab to keep the face tidy, with fewer than a third (31%) moving the face back quickly. Both of which are key for minimising air ingress.

Equally, only around half of survey respondents (54%) included an additive to counteract maize aerobic spoilage.

One of the reasons that some of these crucial steps were not being used, which was hinted at by the survey, was that not all farmers fully appreciated the damage that aerobic spoilage can cause.

Roughly a third of respondents did not recognise it as causing losses in feed quality or risk of mycotoxins. Also, only around a half of respondents (54%) identified that aerobic spoilage leads to lost dry matter tonnage.

In reality, we know that dry matter losses in maize can occur both as a result of poor fermentation and aerobic spoilage – with the greatest losses likely to come from the latter. So it is important to target both causes. It is perfectly possible to do this using an additive combining efficient fermentation bacteria of Lactobacillus plantarum MTD/1 with another beneficial bacterium L. buchneri PJB/1 that inhibits yeasts and moulds – for example with the product Ecocool, which is available in certain parts of the world.

Conclusion

Ultimately, with the importance of maximising milk from home-produced forage, understanding the scale of losses in feed value and dry matter that can occur in silage – whether maize, grass or any other crop – is crucial. But what is also important is to understand what causes them – whether poor fermentation or aerobic spoilage or a combination of both.

Without this information, milk producers do not know how much focus to put on preventing them, or the silage management techniques and types of additives that should be used. Using good silage management plus a proven additive and paying attention to the details will put farmers in greater control. ■

Experiences in China

Experience gained last season has pointed to additive use becoming an integral part of silage-making on farms in China striving for maximum nutrients from forage. It is an approach that other parts of the world would benefit from.

"As the people of China look to consume more dairy products, there is clearly a need for efficient milk production," Derek Nelson, Ecosyl global product manager, told International Dairy Topics.

"Having presented research findings on Ecosyl – including results on reduced dry matter losses, improved silage quality and animal performance – we saw the additive being routinely adopted to preserve maize silage across multiple Chinese farms last season. These farms formed part of a leading Chinese dairy business.

"Maize silage was made at 30-35% dry matter. So the preservation objectives were very similar to those in the West. It was also fed in a total mixed ration, along with grass, alfalfa and concentrates, to year-round-housed cows.

"With the quest for efficient milk production, this is a really good example of leaving nothing to chance when it comes to getting the best out of silage," Derek concludes.