

Protecting Feed Value Through Better Silage Management

Corn silage, known as maize silage across Europe, is typically the largest component of the ration for dairy farms throughout the world. It's also one of the largest investments, carrying the full cost of seed, fertiliser, fuel and labour. As input costs continue to fluctuate and margins tighten, many producers are under pressure to increase corn silage output.

Yet, on many farms, the better solution is to boost corn silage efficiency. Improving silage efficiency means protecting corn silage quality and reducing problems such as silage dry matter losses.

Better corn silage efficiency doesn't start with producing more maize – it starts with reducing silage dry matter losses and protecting corn silage quality. By boosting corn silage preservation and forage efficiency on-farm, producers can maximise existing resources and avoid forage shrinking.

Corn Silage Losses: A Challenge that Builds Over Time

At its core, corn silage efficiency is not a complex concept. It simply means preventing losses to make sure that every metric ton harvested delivers as much feed value as possible from any given type of forage grown and harvested. In day-to-day terms, that often comes down to protecting dry matter, maintaining silage quality and ensuring that nutrients are used rather than lost along the way.

What makes silage losses challenging is that they rarely occur in one obvious moment. Instead, they build gradually, from small inefficiencies during harvest timing to problems in the ensiling process and finally to waste at feed-out. This makes them easy to overlook, but costly over time. When dry matter, energy and starch are lost through poor harvest timing, inadequate preservation or aerobic spoilage, farmers are often forced to compensate with purchased feed or higher inclusion rates, thus increasing costs without increasing output.

Having a robust silage protection plan in place, from harvest to ensiling to storage, is therefore one of the most practical ways for improving forage efficiency and safeguarding farm profitability.

Silage Harvest Timing: The Foundation of Corn Silage Quality

Getting silage harvest timing correct is one of the most important decisions in corn silage production. Harvesting corn silage when it's too wet can lead to slower fermentation and excess effluent. Most critically, harvesting too early sacrifices valuable tonnage, reducing the amount of silage the crop can ultimately deliver.

Early Harvest Pitfalls

Harvesting corn silage below 32% dry matter will often result in less production of starch, which accounts for over 60% of the total finished plant weight. This loss in both starch content and final tonnage highlights the importance of proper harvest timing. Harvesting too early will certainly increase input cost from purchased grain.

Late Harvest Pitfalls

On the other hand, if we harvest too dry, above 38% dry matter, we often see reduced packing density due to a more 'spongy', product that resists proper packing. This reduction in density can be catastrophic for proper fermentation and will often result in dry matter loss. Other issues with harvesting dry corn silage are a classic reduction in starch digestibility, along with an inability to properly process the kernel. Together, these factors increase the risk of hind-gut fermentation and kernel passage into the manure. The increase in fecal starch is one of the main causes for unrealised milk production in the dairy industry today. Each 3% increase in fecal starch equates to three liters of lost production (Fredin *et al.*, 2014).

Harvesting at a proper dry matter – between 33–38% whole plant dry matter, depending on the storage facility – is the key to the success of the corn silage crop.

Ensiling and Storage: Where Value is Protected or Lost

Once the crop is harvested, attention quickly shifts to the clamp. While the ensiling process may only last a short time, it can have long-term consequences for corn silage quality and feed efficiency, preserving the nutritional benefits of high-quality forage for cows.

Good corn silage preservation depends on doing the basics well:

- Filling the clamp quickly.
- Ensuring the proper weight is used on the bunk for the volume coming into the clamp.
- Compacting in thin layers.
- Sealing immediately to exclude air.

When oxygen is left in the silage, losses increase and fermentation becomes less efficient. These issues are only fully visible months later, appearing as heating and spoilage leading to reduced feed intake. Each of these outcomes reduces silage quality and limits efficiency.

Why Better Silage Efficiency Improves Farm Performance

The impact of silage quality becomes visible at the feed face. Silage is the foundation of the ration and any reduction in quality affects intake, feed conversion and performance. Well-preserved silage supports the production of high-quality forage for cows and delivers:

- Higher intake.
- More efficient conversion into meat or milk.
- Reduced reliance on bought-in feed.

Improving silage efficiency is therefore not just a nutritional objective. It is a practical strategy for cost control, resilience and margin protection in volatile conditions.

Mycotoxin Risk and Forage Quality: What the Data Shows

One of the consequences of poor storage and fermentation is the development of molds and their associated mycotoxins. Results from the latest Alltech 2025 Harvest Analysis show that feed quality risk remains a real and ongoing challenge globally. In many ways, the risk is growing. Routine testing of silages and TMRs at the Alltech 37+™ laboratory network

continually reveals the multi-mycotoxin challenge. Insights from this testing show that most silages and TMRs are contaminated with at least six or seven mycotoxins and these are a combination of pre- and post-harvest type mycotoxins.

For forage producers and dairy farmers in particular, grass silage stood out as a higher risk area. Across countries such as the U.K. and Ireland, *Penicillium*-derived mycotoxins are adding pressure in forages, largely driven by storage and preservation challenges rather than field contamination alone. This ties directly back to silage efficiency on-farm.

The Alltech Harvest Analysis data reinforces a key message: Protecting forage quality at harvest and during storage is one of the most effective ways to safeguard margin and performance throughout the year.

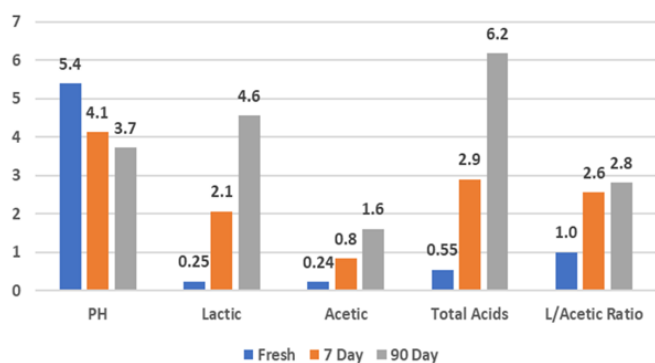
Protecting Feed Value with Silage Inoculants

Silage inoculants for corn silage preservation, such as Egalis™, help reduce dry matter loss and play a clear role within a wider farm resource efficiency approach.

Efficient fermentation is a simple process that requires proper harvest timing at the right dry matter levels and guiding initial fermentation in the correct direction. Inoculants play a crucial role in efficient fermentation due to the unpredictable nature of the epiphytic (natural) bacteria on the crop. Inoculants provide a known amount of proven bacteria designed to assist the native bacteria in fast and efficient fermentation. Once the silage reaches an anaerobic state, a fierce competition begins between the beneficial homofermentative bacteria, which conserve nutrients and undesirable bacteria that thrive in higher-pH environments, (>5). These undesirable bacteria are responsible for inefficient fermentation, resulting in loss of those precious nutrients.

The chart below represents proper fermentation of corn silage from 0 to 7 days to 90 days fermented. The initial pH is representative of typical fresh forage pH at chopping. Once the crop is brought into storage, packed and covered, reducing its exposure to oxygen, the fermentation process begins. At seven days, the pH is down to 4.1. While this is slightly above the target range of 3.7–4.0 for corn silage, it is quickly approaching the desired goal. At the same time, you can also see the rapid growth of lactic acid bacteria, which pushes the pH approaches stability parameters at seven days, this does not mean fermentation has been completed. This is just the first step in the fermentation process. Silage is suggested to be ensiled for 30 days before opening, as a general rule, due to the sanitising effect of fermentation on molds and yeasts

Optimal Corn Silage Fermentation



John Winchell, Alltech 2021

Figure 1: Changes in pH and fermentation products during corn silage fermentation



in the silage. The low pH will render the molds and yeasts inactive until oxygen is again present in the clamp.

Egalis is designed to support a faster, more stable fermentation, helping to protect dry matter and nutrient value, limit the growth of spoilage organisms and reduce the opportunity for molds and related mycotoxins to develop during storage and feed out. By preserving more of what is harvested, farmers are better able to convert corn silage into milk or meat without needing to compensate for losses later.

Focus on What You Keep

In today's farming environment, profitability is not just about what you produce. Increasingly, it is about how much of that value you can keep.

Fortunately, improving silage efficiency does not always require major change. It starts with reducing silage losses and protecting quality at every stage.

Disclaimer: Product availability will vary by region. Product descriptions and any associated claims are not applicable in all markets.

REFERENCES

1. Fredin, S.M., Ferraretto, L.F., Akins, M.S., Hoffman, P.C., & Shaver, R.D. (2014). Fecal starch as an indicator of total-tract starch digestibility by lactating dairy cows. *Journal of Dairy Science*, 97(3), 1862–1871. <https://doi.org/10.3168/jds.2013-7395>



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John Winchell provides Global Technical Support within the Technology Group at Alltech, helping dairy producers and industry professionals optimize forage quality, manage mycotoxin risk, and improve on-farm performance.

With more than 25 years of industry experience, he is a respected speaker and published author known for sharing practical, science-based insights through conferences, webinars, and leading agricultural publications.