



NEWSLETTER

Silage: Aerobic Spoilage Does Not Stop at the Surface

The quality of silage is not determined solely by harvest management or the initial fermentation process. Even after the bunker silo is opened, several factors can compromise forage quality, reducing its nutritional value and generating significant economic losses for the farm.

One of the most common challenges is **aerobic spoilage**, which occurs when oxygen penetrates the silage mass. Once air gains access, yeasts, moulds, and other aerobic microorganisms begin utilizing the sugars and organic acids produced during fermentation as an energy source. This process leads to an increase in silage temperature—a problem that becomes even more pronounced during hot and humid summer conditions—while simultaneously reducing energy content and progressively deteriorating forage quality.

In bunker silos, aerobic spoilage is often most visible in the upper layers, where the so-called “**silage cap**” can develop. This consists of a layer of deteriorated material that typically exhibits discoloration, abnormal texture, visible mould growth, and significantly higher temperatures compared to the underlying silage.

However, the problem is not always confined to visibly damaged areas. Even portions that appear healthy may have already undergone substantial changes. For example, when temperatures in the deteriorated surface layer reach around **60°C**, the silage underneath—sometimes extending as deep as **70 cm below the surface**—may remain free of visible mould growth while still reaching temperatures of **40–50°C**. This condition is often referred to as **latent aerobic spoilage**, a hidden form of deterioration that can easily go unnoticed.

The consequences are substantial. Dry matter losses represent only part of the problem. Aerobic spoilage also reduces nutrient availability and energy density, decreases palatability, and increases the risk of proliferation of undesirable microorganisms and their metabolic by-products.

Including even moderate amounts of **heated silage** in the total mixed ration (TMR) can lead to contamination throughout the feed bunk, negatively affecting cow health and performance. Production losses of up to **2 kg of milk per cow per day** are not uncommon when feed stability is compromised.

For this reason, prevention remains the most effective strategy. Proper compaction of the forage mass, effective silo sealing, and careful management of the feed-out face are essential practices for minimizing oxygen infiltration and preserving silage quality over time.

The availability of **fermentable sugars at ensiling** also plays a crucial role. A rapid and efficient lactic acid fermentation promotes a faster decline in pH, creating conditions that are less favorable for the growth of spoilage organisms such as yeasts and moulds while improving the long-term preservation of the forage.

One often-overlooked application of **molasses** is its use directly on forage destined for ensiling, particularly on the uppermost layers of the silo. Thanks to its high sugar content, molasses promotes the activity of lactic acid bacteria and accelerates the acidification process. A more rapid pH reduction helps stabilize the silage sooner and limits the conditions that favor undesirable fermentations.

Beyond enhancing the fermentation process, molasses can also help reduce the utilization of silage sugars by spoilage microorganisms, thereby contributing to the preservation of nutritional value. The result is a more stable silage mass, reduced risk of heating, and better retention of the forage's nutritional characteristics throughout the storage period.

In an environment where forage and feed ingredient costs continue to represent a significant component of farm expenses, investing in silage preservation means protecting the value of every tonne harvested. Preventing aerobic spoilage is not simply about reducing visible waste—it is about safeguarding nutrients, maintaining feed efficiency, supporting animal performance, and ultimately protecting the profitability of the dairy operation.