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SiloSolve® FC reduces spoilage, decreses dry matter loss in maize silage

By: Mai-Brit Voss, Product Manager

A recent study shows that SiloSolve® FC keeps maize silage fresher for longer, thanks to two bacterial strains that work together to decrease dry matter loss and reduce spoilage.

The newest addition to the portfolio of SiloSolve® silage inoculants, SiloSolve® FC contains two bacterial strains that reduce spoilage microorganisms in different, but complementary ways. According to Product Manager Mai-Brit Voss, a novel and patented strain known as *Lactococcus lactis* 0224 reduces residual oxygen in ensiled maize, limiting the ability of yeast and mold to grow. Meanwhile, *Lactobacillus buchneri* DSM22501 helps keeping spoilage microorganisms in check at feed-out by increasing the amount of acetic acid, thereby improving aerobic stability.

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Study design

The study was conducted at the Institute of Animal Science in Lithuania to evaluate the effect of SiloSolve® FC on fermentation and aerobic stability of maize silage. Maize with a dry matter content of 38.5% was chopped by a forage harvester under farm conditions to a length of 3 cm and ensiled in mini silos.

The trial included two treatments replicated five times each: untreated maize and maize inoculated with SiloSolve® FC at a dose of 150,000 cfu/g of fresh forage. Within two hours of crop preparation, mini silos were filled with approximately 3 kg fresh cut maize forage, sealed and fermented for 90 days at a constant temperature of 20°C. On day 90, the dry matter content was determined and a 10-day aerobic stability challenge was performed. Aerobic stability was determined by monitoring the temperature increase in silages stored in insulated PVC-tubes at 20°C ambient temperature.

Results

After 90 days of fermentation, yeasts and molds were significantly lower in silage treated with SiloSolve® FC than in the untreated control silage (Table 1).

Table 1. Fungi in silage, 90 days of fermentation

TREATMENT	MOLDS, CFU/G	YEASTS, CFU/G
Untreated	1,018	8,600
SiloSolve® FC	15*	19*

*Significant difference for treated vs. untreated (P<0,05).

Figure 1. Effect on aerobic stability

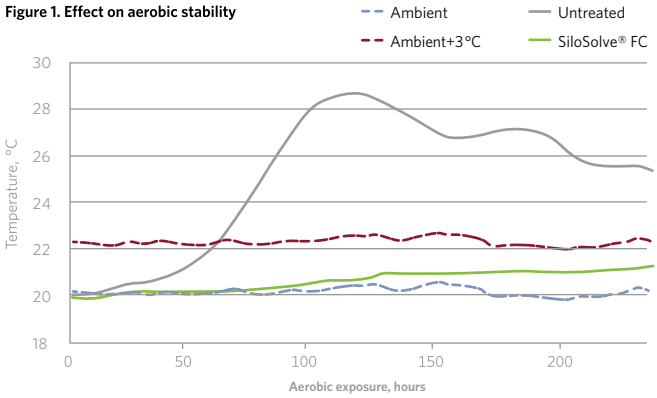

Figure 2. SiloSolve® FC keeps maize silage fresh 10 days after aerobic exposure

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The inoculated silage also had higher aerobic stability, as demonstrated by the lower amount of heat it generated after being exposed to air (heat signals nutrient degradation, which indicates spoilage). Whereas the untreated silage exceeded ambient temperature by 30°C 66 hours after aerobic exposure, the inoculated silage never exceeded ambient temperature and stayed visibly fresher throughout the 10-day aerobic stability challenge (Figures 1 and 2).

According to Voss, the benefit of reducing fungi was a 2.9% points decrease in dry matter loss for the treated silage (Table 2). As seen in Figure 2, the treated silage still looks fresh compared to untreated after the 10-day aerobic stability challenge. (Figure 2)

Table 2. DM loss in the silage on day 90

TREATMENT	DM LOSS (%)
Untreated	6.8
SiloSolve® FC	3.9*

*Significant difference for treated vs. untreated ($P<0.05$).

"The significantly decreased dry matter loss we observed with SiloSolve® FC means feed stays fresher, longer," Voss explains. "This translates not only to less waste, but also to better feed quality — which means better performance for dairy cows and better returns for the producer."