QLF USA
Dairy Technical Bulletin

QLF QUALITY LIQUID FEEDS

Molasses-Urea-based Liquid Supplements Increase the Quality of Maize (Corn) Silage

Silage is a product resulting from proper storage and fermentation of fresh forage under anaerobic conditions (absence of air). During fermentation, bacteria degrade water-soluble carbohydrates and produce organic acids. In early stages of fermentation, acetic acid is the principle acid produced. As the concentration of this acid increases, bacteria that produce acetic acid decrease in activity. Meanwhile, activity of bacteria that produce lactic acid increases. When the acidity increases suff ciently, bacterial action is stopped and the silage is preserved. However, if acid production rate or concentration is too low, clostridial bacterial will act on residual sugars to yield undesirable butyric acid. Clostridia also degrade protein and amino acids, with the formation of objectionable smelling silage.

Addition of urea to chopped whole corn plants at ensiling will increase the crude protein content of silage (from approximately 8 to 12% for an addition of 1.5% urea of plant dry matter) and improve silage quality. Urea buffers the fermentation acids by forming ammonium acetate and ammonium lactate, which prolongs lactic acid producing fermentation. Addition of urea increases silage pH, lactic acid concentration, and total and insoluble nitrogen. Added urea also extends feed bunk stability.

Greater bunk stability of urea-added silage results from more rapid cessation of plant cell respiration and inhibition of heating and fungal growth. Such silage is associated with small losses of dry matter, organic acids, and crude protein both during fermentation and after aeration during feed-out. This improved stability will maintain high silage intakes.

Increased insoluble nitrogen may result from reduced proteolysis and deamination of plant protein and incorporation of urea nitrogen into silage microbial protein. Increased insoluble nitrogen of corn silage may increase the supply of intestinal protein. More insoluble nitrogen would be associated with more peptides and a more slowly degradable nitrogen source for the rumen microbes, thus resulting in higher microbial protein yields. These microbes would primarily include the f ber digesters, because ammonia will stimulate cell growth as their preferable nitrogen source.

The Silage 100 series, products of Quality Liquid Feeds (QLF), are specially designed for use as corn silage additives. In addition to added urea, these molasses-based products are also fortif ed with phosphorus, sulphur, and trace minerals. The molasses serves to enhance the initial fermentation of the ensiled materials. Treating corn silage with Silage 100 will increase the overall nutrition of corn silage.

QLF Silage products:

- An economical source of protein
- Preserve plant protein
- Promote formation of desirable fermentation products
- Provide added trace minerals
- Increase silage bunk life
- Enhance feed intake
- Convenient and safe to use

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