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News Column
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MAKING QUALITY SILAGE

Pack, pack and pack, says Andy Skidmore, DVM, PhD, a technical services specialist with Lallemand. Skidmore discussed management factors influencing silage spoilage at a recent Academy of Veterinarians conference, stressing the importance of sufficient packing in the bunker, encouraging proper pH levels in the pile and protecting silage quality through feeding.

Today's high speed, high volume forage harvesters put critical need on packing capacity. With proper harvest, packing and storage, desirable microbes quickly ferment the silage, producing lactic acid, which lowers the pH level to protect the feed from contamination with undesirable microbes associated with spoilage and toxicity to cattle. Fermentation also produces acetic acid, which helps control undesirable growth of yeasts and molds upon exposure to air when the silage is fed.

In addition to yeasts and molds that cause spoilage and reductions in nutritional value of silage, contaminants can include pathogens such as salmonella, listeria, clostridia and mold-associated mycotoxins. Silage contamination can come from: Soil; Plant damage; Manure; Rodents or other animals caught by the silage harvester; Molds and yeasts; Wildlife, especially raccoons, possum and skunks which can damage silage covers.

Surface spoilage in silage produces heat, water and carbon dioxide as spoilage byproducts, while reducing dry-matter content, palatability and nutritional value of the feed. For example of a 250- by 400-foot bunker silo, with 15 inches of shrink due to surface spoilage. That shrink adds up to 2812 tons of lost feed. At a value of $35 per ton, the financial loss to the producer is $98,420.

The pH of good-quality silage typically runs around 3.8, while the pH of spoiled silage can jump as high as 8. Dry matter content in normal silage averages around 37%, compared with 18% dry matter on the surface of spoiled silage. A university research trial fed cattle a ration of 90% silage, at various levels of spoilage, and 10% supplement. They included spoiled silage at 0%, 25%, 50% and 75 percent of the silage component. They observed a linear decline in dry-matter intake and neutral detergent fiber (NDF) digestibility as the ratio of spoiled to normal silage increased, with an especially large drop as the percentage of spoiled silage increased from 0 to 25 percent.

Proper "facing" of the silage pile as feed is removed should leave a smooth, uniform, vertical wall of packed silage to minimize surface area and air exposure. Upon exposure to air, the numbers of yeast cells in the silage can double every two hours. Normal silage has around 40,000 yeast cells per gram, Skidmore says. Within 10 hours, that population can grow to 1,280,000 cells per gram, and within 16 hours the population per gram can exceed 10 million cells. Problems with yeast-related heating and spoilage tend to begin at around 1 million cells per gram.

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