GUEST COLUMN

Prevent Stinky, Slimy Haylage & Avoid Clostridia Haylage

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You have been looking forward to feeding an excellent first-cut haylage but you find wet, slimy haylage with a smell not leaving your hands and, even worse, cows want no part of it! Sooner or later, many harvesting haylage end up in this situation. Recognizing the factors involved in formation of clostridia haylage and then managing accordingly can reduce these headaches.

A Perfect Storm for Clostridia Haylage

Numerous factors contribute to clostridia haylage. Legumes and small grains are popular choices for haylage; however, their higher protein and mineral content work as buffers against decreasing forage pH during fermentation and nutrient preservation. They are generally lower in water-soluble sugars, feeding the lactate-producing bacteria critical for reducing forage pH. Often, legumes and small grains are harvested when forage drying is difficult, entering fermentation wetter than desired. Further, while a disc mower enables a high rate of mowing and the air turbulence created under the hood lifts the forage for easier cutting, it also creates whirlwinds in the soil, increasing the chances of clostridia inoculation after heavy manure application.

Suggestions for Reducing Clostridia Haylage

Mow at 2.5-3" cutting height. While raising the mower bar may reduce yield slightly, leaving more photosynthetic material speeds up plant growth for the next cutting and increases stand longevity. The higher height reduces soil incorporation from sickle bar mowers and lowers soil contamination from disc mowers. Twisted or angled disc blades are great for lifting heavy or lodged forage, but such blades also increase soil contamination.

Wide swaths encourage faster and more even drying. Mown forage will continue photosynthesis while lying in the field. Photosynthesis will combine CO_2 and sunlight with forage moisture to create water-soluble sugars. This reaction is a win-win, with more sugars to foster fermentation and less water hauled to storage. Wide swaths enable forage to be heated by sunlight, causing wilting as the plant attempts to cool itself by moving stem moisture through leaves. If the swath is lying on a 2.5-3" forage stubble, air can move under it to encourage drying and lessen the chances of moisture wicking into the mown crop from wet soil.

Manage raking, tedding, and merging equipment to reduce soil contamination. High-capacity forage choppers require wide swaths to be raked and merged for more efficient harvesting. Tedder use can speed up drying. Any time equipment touches the forage there is risk for soil incorporation and leaf loss. Consult your manufacturer and adjust equipment accordingly to minimize soil pick-up.

Chop haylage at <65% moisture. Hopefully sunshine has been fostering photosynthesis and causing wilting, and the wind has been removing moisture. Cloudy and humid days do not help. The wetter the haylage, the more lactate must be produced to sufficiently lower forage pH to preserve nutrients. Further, clostridia like higher pH conditions. Waiting for appropriate moisture may test a person's patience, but it is a critical step in the process.

Inoculate with lactate-producing bacteria to decrease forage pH. Inoculation helps overcome inherent forage buffering capacity and acidifies water in haylage. Most companies supply haylage-specific inoculants providing 200,000+ colony-forming units per gram of forage, or recommend doubling applications of standard products in challenging conditions. Fermentation can be summed as "The side that gets there first with the most wins." A few suppliers have developed organisms and products specifically designed for clostridia-prone situations.

Pack haylage to remove oxygen and stop plant respiration. Chopped plants in storage are deprived of sunlight, and consequently conduct the "dark reaction" (respiration reaction of photosynthesis; O_2 and sugars combine creating H_2O, CO_2, and heat). The minimal O_2 present in well-packed haylage is quickly used up in plant respiration. Lactic fermentation can then occur to rapidly reduce forage pH and hinder clostridia growth.

Clostridia Haylage Does Not Have to Happen!

Forage, weather, and agronomic conditions can come together at the wrong time to cause clostridia haylage. Developing a plan to reduce potential for clostridia haylage can improve overall haylage quality and limit chances of being greeted by a stinky, slimy mess.