



Don't choke at the plate with your forages

ATHLETES ranging in age and experience, from kids through professionals, put time and effort into practicing their sport. Strength and endurance training, coupled with batting practice, are needed to be successful at the plate as a hitter in baseball. However, poor sleep or staying at a celebration a bit too long prior to a game can render the hitter's preparation useless and result in the batter choking at the plate.



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Forage management can be thought of in a similar way. There are preservation and feedout issues that can rob your farm of the preparation and effort put into growing and harvesting a high-quality silage.

Early and complete preparation

Successful forage begins with appropriate soil and seedbed preparation, adequate soil fertility, and proactive agronomic management through the growing season. Then crop scouting and monitoring with key advisers, such as agronomists and nutritionists, are necessary. Lastly, your team prepares for harvest by monitoring plant or grain maturity, plant health, and disease pressure, and checking whole-plant moisture in corn for silage. This all goes into successfully timing harvest and achieving optimal quality.

These steps are akin to scouting the opposing team's pitcher and game day preparation. Unfortunately, all of this preparation does not guarantee a high-quality forage in your total mixed ration (TMR). Much like poor sleep can equate to choking at the plate, a high-quality forage at harvest can deteriorate due to poor preservation or feedout management practices.

Fermentation shrink and feed

hygiene issues associated with poor fermentation or feedout stability are the two main issues why a forage can "choke at the plate." There are two major culprits — fungi (mold or yeast) and undesirable bacteria. Beyond the typical feedout stability issues that are more commonly discussed, the following two more unique case study examples detail how an otherwise well-prepared forage can sour.

A pair of case studies

Sealed for eight months, but feeding like fresh forage. Harvest conditions can prove to be a major impact factor beyond our control. Feedout management with frozen feed can further contribute to digestive upset and herd performance challenges. In some years, harvesting corn for silage or a late grass or alfalfa cut happens in freezing temperatures. We can't control the environment; however, we need to recognize that frozen feed may not ferment in the near future, or at all.

Adequate fermentation needs fuel to ferment (sugar), fermenting bacteria (lactic acid-producing organisms), an anaerobic environment (no oxygen), and heat (warmth) for the bugs to grow and do their thing. Think about baking bread — will the dough rise if put in the freezer? The same issue plagues frozen feed.

Both Luiz Ferraretto, University of Wisconsin-Madison extension dairy scientist, and my personal experience have shown me that frozen feed at harvest can ferment when thawed out, but we need heat and to keep the air out. The case at play here involves keeping the air out when feeding frozen forage.

Based upon recent experience with several dairies feeding from larger "silos," such as silo bags over 12 feet in width and very large piles, we've found cold feed under 40°F in the heat of summer. This

cold feed has corresponded to gut health issues. In these cases, laboratory feed analyses look just like "fresh" chopped corn or hay. The forage pH has been high, acid levels are low, and starch digestibility in corn silage is poor.

The eight-plus-month sealed forage is feeding like fresh feed, and as it thaws out, the forage comes alive in fungal and bacterial growth because it's exposed to air. In cases like this, take extreme measures to keep air out of the forage by adding tires over the plastic parallel to the face, or hang a couple of logging chains over the bag to put a tourniquet on your bag. You also may want to add acid to the forage to stabilize the yeast and mold growth.

Cross contamination from manure storage or flooding. With increasing focus on feed hygiene for many herds, we're now delving into bacteriology. This approach has proven valuable time and time again, finding health and performance opportunities where other indicators aren't helpful.

We've recently looked at undesirable *Enterobacteriaceae* bacterial growth in TMRs and feed. This is a broad laboratory count that captures bacteria load, including *Salmonella spp.*, *E. coli spp.*, *Klebsiella spp.*, and many more. Silage science researchers have used this measure as a proxy for feed fermentation efficiency for many years as well, and there should not be any of these bacteria present in clean feed.

Digging into the TMR and feeds for bacterial contamination has proven valuable to check your forage undesirable bacteria levels for opportunities. Hence, we're using this approach as another TMR hygiene diagnostic, and there have been two unique situations that have played out in multiple case studies: cross contamination coming from manure storage or following

heavy rainfall and flooding.

Feed stored in close proximity to manure storage, or feed that experienced flooding and pooling water, may exhibit higher enterobacteria levels. Fecal matter brings bacteria directly, and heavy water levels and flooding provide an environment where bacterial growth can take off. These may be other areas to look into should your herd sporadically experience gut health disruptions. If your silage has high levels, consider a nutritional mitigation plan such as yeast and bacterial probiotic to counteract, or implement a longer term solution such as moving your feed storage or breaking the pathway to contamination.

Just two examples

These cases represent a couple of scenarios where well-managed crops, from soil to harvest, have turned for the worse. These situations are akin to choking at the plate in baseball, and the outcome is unfortunate. However, just as struggling batters study game film to understand what happened at game time, your dairy can learn from experience and diagnose factors that contribute to your forage not living up to its potential.

Consult with your nutritionist, veterinarian, and feed management team in this area. Bring the group together and review your feed hygiene plan. The benefit to your herd's health, performance, and feed conversion efficiency may prove substantial. 🐄

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