

# THE FORAGER

*Agronomics with livestock in mind!*

## **A Symptomatic Look at Our Silages**

The harvest is coming soon – just a few short weeks and producers will be chopping and ensiling their forages, getting ready for fall and winter feeding. After the harvest is completed, questions may loom – things that may impact a ration program, along with productivity, health, reproduction and ultimately profitability. It is better to consider these questions before hand, so that if possible, problems can be averted.

One of the longest nights in dairying is the night before opening a new silo, silo bag or bunker. Questions like: Did I get the moisture right? Did I pack tightly? Did I chop at correct length? ~ are asked over and over until somehow we finally manage to fall asleep. Upon opening the silo (or other storage unit) sometimes we come face to face with our worst fears. Although little can be done at this point, it is imperative we take the time to evaluate the “why” and “how” to reduce the chance of repeating our mistakes another year and with another harvest. Now is the time to think about what we can do to make sure what we're finding doesn't happen again. The following is a list of common symptoms in silages and the possible reasons for their occurrence.

**Acetic acid smell (vinegar smell)** - This usually occurs due to improper fermentation when acetic acid bacteria dominate the environment and convert the available sugars into acetic acid. Ensiling a crop with high moisture content and low sugar content is the usual culprit. Lactic acid producing bacteria should dominate.

**Silage hot (higher than 120°F)** - Typically occurs when bunker is filled too slowly, packed lightly as to not exclude oxygen, inadequate feedout (large surface area of the silo), low silage moisture from a mature crop, or the chop length is too long.

**Heat-damaged (dark brown to black color)** - An indicator of high temperature damage most likely caused by improper exclusion of oxygen. This dark color and strong burnt caramel/tobacco smell may be caused by inadequate packing, incorrect stage of maturity (too mature), long chop length and/or low moisture content for crop.

**Spoiled milk odor (butyric)** - This strong “off” odor is typically caused by clostridial fermentation and the production of butyric acid. This type of fermentation occurs when ensiling a crop at a high moisture content and low sugar content (inadequate lactic acid bacteria for proper fermentation).

**Alcohol smell** - This smell is typically found in silages that have had fermentation dominated by yeast, which converts the sugars into alcohol. These yeasts also utilize lactic acid therefore affecting the pH of the silage (increased). This problem is usually accompanied by extensive mold growth and spoilage. It is typical of poorly compacted silages made from overly dry crops.

**Seepage (bunkers)** - Excessive effluent (seepage or run-off) is caused by ensiling forages at higher than recommended moisture (i.e. low DM content). Damaging the plant tissue being harvested by utilizing dull chopper knives can also contribute to seepage problems.

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**Short bunklife** - Aerobic deterioration of silages during the feedout phase may be caused by multiple factors. Shortened bunklife may be caused by slow feedout (large surface area of the silo or other storage structure), high “spoilage” organism populations such as yeast and molds, low crop moisture at harvest, low plant sugars at harvest, ensiling the crop at an advanced maturity stage or poor packing (low packing density). Silage-based rations should not be left in the feed bunk for an extended period of time, especially in the summer months.

**Moldy silage** - Presence of oxygen due to improper packing or slow fermentation are mostly responsible for mold growth in silages. Slow feedouts, excessive particle length, low crop moisture, inadequate covering or no covering are all favorable for mold growth.

The goal of any silage system is to start anaerobic fermentation as soon as possible and to reach a pH less than 5.0 as rapidly as possible. This can only be achieved when: (1) we fill the structure as fast as possible, minimizing exposure to oxygen; (2) we make sure knives are sharp and the cutting length is correct; and (3) we ensile at the correct moisture content. Silage fermentation additives (preservatives and inoculants) can be useful for achieving a quick and proper fermentation, but will also be dependent on the preparation and management of the entire harvest and ensiling process/structure.

When we are confronted with problem silages we must also determine the best feeding strategy. Each case must be treated individually. Different approaches may be needed depending on the farm situation and the nature and severity of the silage problem. Ideally, damaged (or improperly fermented) silages should not be fed to dairy cattle. At the least, spoiled portions should be separated and discarded since they may not only affect milk production (lower nutritional quality) but may affect DM intake, rumen health and digestibility. Remaining silage to be fed should be analyzed prior to feeding, because these silages usually have significant changes in DM, protein and energy. Protein and energy losses must be replaced in the ration, or milk production will suffer.

Using protein loss as an example, consider the impact of feeding silage with a loss in protein equal to 1 percentage point. If the cows are consuming 20 lbs of DM from the silage, the 1% point protein loss will create a 0.20 lb protein shortage for the cow. This is equivalent to a loss in milk of about 2.4 lbs/cow daily. In some cases, spoiled silage can be a source of bacterial infection (listeria, etc.) or toxicities (mycosis or mycotoxicosis), both of which can have severe effects on production and health. These problems are difficult to predict, but risks can be greatly reduced by discarding spoiled silage.

Because feed cost is a major expense in dairying and because silages represent a significant portion of the feed, care must be taken to make and feed the best quality silage possible.

*(Edited from an article by Dr. Duarte Diaz, Novus International, Inc.)*

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**Contact the Agronomy Office for Information  
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