by John Goeser

Corn silage two-minute drill

PICTURE yourself with the playbook in your hands as several key decisions loom while coaching your team in the final minutes of the game. Your team is relying on you to put them in the right position to score and succeed.

Each year, corn harvest for silage is very similar. There are numerous teammates that need to be organized and coordinated for a successful season. The conditions may dictate different decisions made this year relative to last. Hence, you need to be ready to make the call as circumstances change.

Numerous real-time measurements can play into your decision-making process, and it may help to have them organized like a playbook in front of you. Then, after the final ton of chopped corn is packed into the silo, we can review the season's successes based on different metrics. This annual growing and harvest season review can be thought of like watching a game tape to find opportunities for the next competition.

Make the right call

Many different growing conditions and agronomic practices affect how and when corn should be harvested for silage. Often, I overhear a producer comment, "Oh, we'll just take that corn for silage" in reference to harvesting poor-looking corn. Grain or silage corn is far too valuable to ignore opportunities in fertility, crop protection, or harvest management as the season winds down.

During the growing season, working with an experienced agronomist can help determine which fertility and crop protection applications are warranted. These decisions affect the growing crop and contribute to the season's success, just like making the right adjustment in the middle of a game. As harvest comes into focus, crop health and contamination, grain maturity, whole-plant moisture, chop length, and kernel processing need to be monitored with the same intensity as the weather forecast.

Beyond nutritive measures, some producers are checking yeast, mold, and mycotoxin levels in green-chopped corn. Sometimes, allied industry representatives take these samples to help manage the harvest. If your farm makes these measures, anticipate high yeast levels and interpret the results with caution. This outcome is to be expected because wild yeasts are relatively abundant in nature with temperate growing conditions. The concern level here is relatively low, recognizing that a successful fermentation will greatly reduce the yeast load. Mold and mycotoxin measures can be more variable. Mold is less concerning than mycotoxin load, as the latter causes harm to animals.

Most of the common mycotoxins we measure are derived from the field. Mycotoxins such as deoxynivalenol (DON) or T-2 toxin are likely to subsist through the ensiling process. Historic research shows that mycotoxin concentration is relatively stable in fermented forages; however, recent research from the University of Wisconsin suggests that DON levels can actually rise in well-fermented silos.

Beyond our control

After recognizing mycotoxin contamination, many producers have wondered what they should have done differently. The answer in most cases is nothing. Regional mycotoxin contamination is often beyond our control and due to environmental conditions during the season. If your team measures substantial mycotoxin contamination with freshly chopped corn, make every effort to ferment the crop quickly and efficiently. Consider a research-backed two-stage inoculant or preservative that promotes stability later when the crop is opened up to feed out.

In addition to monitoring contamination, ensure whole-plant moisture and kernel maturity are evaluated. Strive for 65% moisture and half-milk layer kernel maturity with most storage systems. In some situations, the moisture and kernel maturity do not fully align. Next, consult with your nutritionist regarding the desired kernel processing and particle size requirements. In most cases, complete kernel destruction and a freshly chopped corn kernel processing score of 65 or greater are desirable. Kernel processing score will likely rise five or more points in storage as the silage ferments and starch in the grain softens and breaks down.

Review the game tape

After the corn is in the silo or under plastic and fermented, it's important to also review the season's successes and pain points. Here is where feed-out mold and yeast measures can be helpful to pick up silage stability opportunities that you won't be able to see with your naked eye.

You may also opt to check your silage density. Newer recommendations focus on as-fed density instead of dry matter density. As-fed density accounts for moisture, which is important. Other crop review points include fermentation measures such as pH, lactic and acetic acid, and alcohols such as ethanol. These help determine how effectively your crop was conserved. In most cases, we expect to measure a pH of less than 4, lactic acid above 3%, and a lactic-to-acetic acid ratio of at least 3:1 for most bacterial inoculants. For reference, roughly 70% of Rock River Laboratory database corn silage samples met the first two thresholds; however, only 30% met the lactic-to-acetic acid ratio threshold over the past five years.

If your farm used a research-backed two-stage bacterial inoculant with *Lactobacillus buchneri*, then the acetic acid content will be intentionally elevated to promote aerobic stability. In this case, the ratio to lactic acid holds less value.

With an average dairy diet in the U.S., a 500-cow dairy will have roughly $250,000 invested in corn silage from the soil to the silo. Time and effort spent preparing your game plan for harvest and reviewing the tape after the silage season is over will uncover opportunities for next year. ●

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