

Inoculant know-how

Adding a word of warning, Muck says inoculants typically are more effective for maximizing the quality of silage made from legumes and grasses than for corn silage. This may be because, as long as corn silage is put up right, there is less room for improvement. Muck says corn usually carries higher natural populations of lactic-acid-producing bacteria.

"It's more of a dicey call as to whether using an inoculant for corn silage is profitable," Muck states. "But there is a new type of product on the market [that] works in a different way. It may have more potential for use on corn silage. These products contain *Lactobacillus buchneri*. It is heterofermentative bacteria, meaning it produces more than one type of acid."

According to Muck, *L. buchneri* produces lactic acid and also acetic acid, which is a good inhibitor of yeasts and molds. It may be effective in improving aerobic stability and bunk life during summer feedout, when silage heating may be an issue.

"So when looking at silage inoculants, I'd remember the two different types. Those containing *plantarum* can make good [hay crop] silage better, while products containing *buchneri* are good alternatives to propionic acid or anhydrous ammonia for improving bunk life, for example, in corn silage to be fed

What about hay inoculants?

While silage fermentation depends upon bacterial activity, ideal hay production occurs when forage dries sufficiently to minimize microbial growth. Hay that is baled too wet becomes a breeding ground for bacteria, yeasts and molds, and loss of feed value. Rapid growth of microorganisms can also cause heating and, in severe cases, combustion is possible.

If hay is too dry when baled there is loss of leaves, which contain higher concentrations of nutrients. Hay inoculants have been developed for the purpose of minimizing growth of unwanted microbes when moisture content at baling is too high. Different from silage inoculants, these products are formulated specifically for hay. However, Agriculture Research Service (ARS) scientist Richard Muck says the value of hay inoculants remains questionable.

"From the trials I've reviewed, it's hard to see substantial benefit," he states. "As a preservative for hay, propionic acid is the gold standard — the product by which all others are judged."

To minimize leaf loss, most forage specialists recommend baling when hay crop moisture is at least 15%. A common rule-of-thumb suggests 18% as the target when making big round bales. Spoilage is more likely when moisture levels exceed 20%. Typically, spoilage can be reduced with application (at the baler) of propionic acid-based preservatives to hay with moisture content of 20%-25%.

in warm weather. But I wouldn't use *buchneri* for a hay crop."

Muck emphasizes the importance of using silage inoculants correctly. They might not look like it, but these products contain living organisms and should be handled accordingly. Products should be stored under cool, dry conditions.

Adequate distribution at application is essential, too, since bacteria can't move

throughout the silo of their own accord. For the best distribution, Muck recommends application at the forage chopper.

He also warns that inoculants are no substitute for management. Silage still has to be put up right. And the best return from inoculants results when they are used with good silage management.



10 Vaccination Tips

Proper vaccine management increases effectiveness.

Vaccinations are an important key to proper animal health and herd health management. To ensure that vaccination is as effective as possible, proper vaccine handling and administration is very important. Dale Grotelueschen, veterinarian with Pfizer Animal Health, offers these 10 tips:

1. Consult your veterinarian to develop a protocol that fits the health goals of your operation.
2. Select a quality product. Consult your veterinarian to ensure you are selecting the right products for your use. It is important to purchase only federally licensed vaccines from a reliable source.
3. Carefully read the label to maximize the value and effectiveness of the vaccine. It is important to understand precautions, so vaccines are given at the right stage of the animals' lives, to animals of the right age, in the proper dosage and at the appropriate intervals if more than one dose is needed.
4. Store the vaccines according to label directions, paying particular attention to the manufacturer's recommendations for correct temperature and light conditions.
5. When transporting vaccines to your cattle processing location, store them in a cooler with an ice pack. Keep the cooler and products in the shade.
6. Always use a sterile transfer needle or disposable syringe when rehydrating products.
7. Mix only one vaccine bottle at a time prior to administration. A good rule of thumb is not to mix more vaccines than will be used in 1 hour.

8. Subcutaneous (Sub-Q) injections are the preferred route whenever label instructions allow. All injections should be given in the neck.
9. Make sure to use new, sharp needles and the correct gauge size for the vaccine being used and the size of the animal. Change needles every 10-15 animals, and never re-enter a vaccine bottle with a used needle.
10. Always properly clean equipment and syringes after vaccinating.

Grotelueschen suggests using the following steps to assure your equipment is sterilized:

- ▶ Reusable syringes should be washed in hot, distilled water. First wash the outside. Then take the syringe apart to wash it thoroughly.
- ▶ Fill the syringe with water, and cover it with damp paper towels.
- ▶ The wrapped syringe should be placed in an open, resealable plastic bag and placed in the microwave on high for 5 minutes. The damp paper towels prevent the metal parts from sparking.
- ▶ Transfer needles also should be sterilized in the microwave; wrap in damp paper towels, place in an open resealable plastic bag and microwave on high for 30 seconds.



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