



Ridin' Herd

► by *Rick Rasby*, Extension beef specialist, University of Nebraska

This may be the summer to store DG

This was an interesting winter for feeding because of the availability of distillers' grain (DG) for cow-calf producers at a reasonable price. There were many occasions this winter when DG was priced at 70% the price of corn. Because DG has a greater energy value than corn, this made it very economical and an extremely good buy when calculated per unit of total digestible nutrients (TDN).

A good combination

Research indicates that grain byproducts and forages, when fed together, have a positive associative relationship. That means that when DG is fed with forages, there is no reduction in the digestibility of the forage and no decrease in forage intake.

The price of DG usually decreases in the summer as cattle-on-feed numbers decrease. This may be the summer to be prepared to buy DG, store it, then feed it when cows need to be supplemented protein, energy, or both.

Storing grain byproducts

Usually wet DGs are delivered by the semi-load and should be fed within a week (summer) to three weeks (winter). The relative short shelf life is a key obstacle for cow-calf producers. For cow-calf producers, there is a disconnect between timing of supplementation needs (winter) and the lowest price (summer, greatest supply).

Research has shown that wet DG will not spoil if the oxygen is removed during the storage process. Wet DG by itself, at 65% moisture, cannot be stored successfully in a bunker silo; however, it can be stored in silo bags if there is no pressure put on the material to squeeze the air out. If there is pressure put on the bag, the bag will tear.

The forages used for bagging and bunkering were ground using a 5-inch (in.) screen and used as bulking agents. For more information go to <http://beef.unl.edu>. At the home page, on the left-hand side is a navigator bar titled "By-Products Feeds." Click on that, and the next page will have the storage manual.

Inclusion of forage

Forages that are good candidates to mix and store with wet DG are low-quality grass hay, wheat straw, cornstalk residue and Conservation Reserve Program (CRP) hay,

to name a few. When the combinations of feeds were bagged, the bagger was held at a constant pressure of 300 pounds per square inch (psi). As the amount of forage included with the wet DG increases, the height of the bag increases.

In contrast, as the amount of the forage in the mix decreases, the bag begins to squat. As the bag squats, there is a greater potential for the bag to split. The minimum amounts when bagging with wheat straw and cornstalks are a mixture of 12.5% wheat straw with 87.5% wet DG on a dry-matter (DM) basis. The percentages on an as-is basis are dependent on the DM or moisture content of both the straw and wet DG.

Grass hay is less fibrous than either wheat straw or cornstalks and, as a result, more grass hay is needed when mixed with DG. For combining grass hay and wet DG, mix 15% (only 6%-6.5% on an as-is basis) grass hay with 85% wet DG.

The percentage of forage and wet DG that is optimal is different when storing in a bunker silo compared to a silo bag. The percentage of grass hay needed in the mixture is between 30% and 40% on a DM basis.

The 40% grass hay:60% wet DG mixture packed best when using large, heavy equipment for packing. Research would indicate that a 25% wheat straw:75% wet DG mixture on a DM basis is too wet to get a good pack and seal. A producer in our area used a ratio of 35% wheat straw:65% wet DG on a DM basis and, using heavy equipment to pack the mixture, indicated that the material packed well. The wet DG that the producer used contained more moisture than what we used.

Be flexible; you will know right away if the mixture is too wet or too dry. If it is too wet the equipment will sink and it will be difficult to drive on. If it is too dry, it will be spongy. Either way, you will not get a good

seal for the ensiling process. In the bunker silo, our data indicated about a 3-in. to 4-in. layer of spoilage for the 35% grass hay:65% wet DG mixture on a DM basis. The DM content of the mixture was about 40%.

A combination of wet and dry product could be bagged together. A mixture of 50% wet DG:50% dry DG on a DM basis was the optimal combination to bag. Also, a mixture of 60% wet corn gluten feed (WCGF):40% wet DG was the optimal mixture to bag of these two ingredients.

Some ethanol plants produce a modified wet DG product that is 45%-50% DM. This product is dry enough to bag by itself.

Solubles mixed with forage

Distillers' solubles (condensed corn distillers' solubles, or corn syrup) is a liquid feed product. Solubles are normally 25%-35% DM and contain more fat, but somewhat less protein, than wet distillers' grains. Handling distillers' solubles brings challenges inherent in all liquid feeds, such as equipment and pumps, circulation of the liquid to ensure "settling" does not occur or separation and the potential for freezing in cold temperatures. Therefore, one option is to store distillers' solubles mixed with forages in either bags or bunkers.

Solubles have been stored in both bags and in bunker storage facilities. Mixtures of 41% solubles with 59% cornstalks have been stored in a bunker. It appears that approximately 50% stalks or wheat straw would be the minimum required to successfully store solubles in a bunker. Assuming solubles are 30% DM and forage is 90% DM, then a 50:50 blend of solubles and forage on a DM basis equates to 75% solubles and 25% forage on an as-is basis.

Storing solubles in bags has been accomplished by mixing 50% cornstalks with 50% solubles (DM basis), and 50% solubles with 50% wheat straw. We have bagged 25% solubles with 75% wheat straw but increased the moisture (or decreased the DM) to 50%. Similar storage worked well with 45% solubles and 55% straw (DM basis). The solubles at either 25% or 45% mixed with straw was increased to 50% moisture (or decreased to 50% DM) by adding water and stored in a bag with no spoilage or compacting problems observed.

Molds and mycotoxins

Mold production and foul odor may occur during storage of wet coproducts, especially when piled and left uncovered. After weeks of storage, some color changes are noted as well as some mold growth at the surface. If the pile “seals” itself, the material below the surface appears “normal” and there will be little to no change in feed quality.

Given concerns over the dangers of feeding moldy corn grain to livestock, one might reasonably question the safety of feeding moldy coproduct to livestock. Samples have been analyzed from different storage sites for mycotoxin concentrations.

Only fumonisin was found to be present in any of the samples, but at a low level. The site with the greatest concentration of fumonisin was 1.4 parts per million (ppm), with the average in all four samples being 0.8 ppm. The Food & Drug Administration (FDA) recommends total fumonisins in rations not exceed 30 ppm. Even with these results, try to eliminate oxygen when distillers’ is stored with forages.

Final thoughts

Research says distillers’ grain is a good fit in forage diets. Be ready to take advantage of distillers’ grain if the price is right. Storage

is best if mixed with a low-quality forage like straw, cornstalks or CRP hay. Distillers’ solubles can be mixed with low-quality forages, stored and fed at a later date.



E-MAIL: rrasby@unlnotes.unl.edu

Editor’s Note: “Ridin’ Herd” is a monthly column written by Rick Rasby, professor of animal science at the University of Nebraska. The column focuses on beef nutrition and its effects on performance and profitability.