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Research shows promise for distillers grains as part of beef cattle feed mix

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Little research has been conducted to specifically evaluate distillers grains in beef-cow rations. However, extensive research with growing-finishing cattle as well as lactating dairy cows gives some insight into when and where distillers grains may fit for beef cows. These situations include feeding as a protein source, particularly for low-quality forages (replace CGF or soybean meal), as a low starch-high fiber energy source (replace CGF or soy hulls), and as a source of supplemental fat (soybean replacement).

Distillers grains can be fed as an excellent source of supplemental un-degraded or "by-pass" protein for high producing dairy cows. Up to 20% of the ration dry matter can be fed in these situations (Schingoethe, 2001). Beef cows need less supplemental protein than dairy cows, but in many production systems they are fed poor-quality, low-protein forages. In these situations distillers grains fit well as a supplemental protein source.

For an extreme example, in native winter range in the West, Colorado researchers found that distillers dried grains (DDG) compared favorably with alfalfa hay or cull navy beans as a supplement to provide 0.4 lbs of protein per day to beef cows grazing native winter range (Smith et al. 1999).

When corn gluten feed or distillers dried grain were compared by Illinois researchers as supplements to ground alfalfa hay for lactating Simmental cows, distillers dried grain fed cows gained more weight per day, but corn gluten feed fed cows produced more milk (Shike et al. 2004). Calf weights and rebreeding performance were similar. In subsequent feeding trials, Illinois workers compared supplementing ground cornstalks with either dried distillers grains with solubles or corn gluten feed in lactating beef cows. Both 114 Simmental and 88 Angus cows nursing calves were used in the two experiments where limit-fed, total mixed rations were offered. There was no significant difference due to type of co-product used, as both products resulted in similar milk production and calf weight gain.

Table 1: Digestibility of low and high quality forages

	Stover	Stover + Corn	Stover +CGF	Stover +DDG	Alfalfa	Alfalfa + Corn	Alfalfa +CGF	Alfalfa +DDG
Dry Matter Intake, % BW	0.75	1.58	1.67	1.40	1.66	2.08	2.15	2.06
Forage Intake (lbs/day)	5.67	6.68	6.997	6.39	13.8	10.01	10.12	10.30
Digestability, % of Dry Matter	39.1	53.7	58.9	59.4	55.8	66.1	60.1	61.8

Distillers grains, like corn gluten feed, are low in starch and may be more effective as an energy supplement with poor quality forages. An example of this is shown in Table 1. Note that both corn gluten feed and distillers dried grains were superior supplements to straight corn grain in the corn stover diets, but not the alfalfa diets. Corn stover intake was significantly increased with supplementation and both gluten and distillers grain improved dry matter digestibility. On the other hand with the higher quality alfalfa forage, corn proved to be the superior supplement, yet all three types were excellent in dry matter digestibility. However, it is important to note that when alfalfa was the forage the supplements replaced the forage in the total intake, thus lowering alfalfa intake. That was not the case with corn stover.

What is the bottom line of these calculations?

1. For average cows in good condition for the last 1/3 of gestation, 3-5 lb. of distillers dried grain or 8-15 lb. of wet distillers grain per day will meet their protein and energy requirements when fed as a supplement to corn stalks.

2. For average cows in good condition for early lactation, 6-8 lb. of distillers dried grain or 20-23 lb. of wet distillers grain will meet their protein and energy requirements when fed as a supplement for corn stalks.

3. These rations should be fine-tuned for the specific cow size, stage of production, condition score and weight gain requirements, environmental conditions, feed analyses and operational goals. Additionally, vitamin and mineral ration concentrations need to be evaluated. Ration analysis programs like BRANDS may be a helpful tool for this purpose

(This article represents part of Drs. Strohbehn and Loy's piece on co-products for cattle. To read the research article in its entirety, visit http://www.extension.iastate.edu/Publications/IBC26.pdf.)

Curb feed costs by managing storage and feeding waste

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Feed that has been securely stored under tarps is removed for cattle consumption during wintertime.

Feed waste can occur during each step of storage and feeding: harvest, transport, storage, processing, mixing, feed delivery and finally at the bunk, hay ring, or feed trough.

To manage losses it helps to know where waste occurs and how much there is – weighing feed before and after each step will help determine both.

Feed waste during storage can be greater when storing wet feeds, like silage or modified distillers grains, storing feed outside or storing feed for a longer period. Some of the loss is due to spoilage, part is moisture loss and then there is dry matter loss. It would not be unheard of to have greater than 25% feed loss when storing it on earth with large round bales and twine wrap. In this situation, a great deal of that waste would be due to spoilage. Net wrapping and storing large bales on rock or tires off of the ground can significantly reduce those losses by 10% or more. Storing hay under a roof out of the weather would typically be the lowest loss, which has been measured to be close to a five percent loss. Covering piles of silage and wet or modified distillers grains or other wet feeds to eliminate exposure to air and weathering can reduce spoilage and losses. Managing silage piles so that three to four inches of the exposed area is removed per day when feeding will also help reduce losses.

Processing some feeds will reduce losses when feeding, but there may be some waste when doing the processing, so there is a tradeoff. For example, grinding large bales of forage will result in some loss, especially if it is windy, but the increased consumption and lower waste when feeding may offset the loss and cost of grinding. There will certainly be some loss in delivery and mixing of feed. Having equipment that is operating efficiently and operator management are keys to lowering feed waste in this area.

The hardest area to determine waste is at the feed bunk or feed trough. If you can see even a little feed or forage on the ground or floor it is likely that three to five percent of what is delivered is wasted. A total mixed ration would typically have lower losses than feeding forages and grains separately. High forage rations are probably prone to more waste, mainly due to the volume of the material delivered and the nature of the animal when consuming the feed.

Making sure feeders and bunks are in good repair with no holes is primary. Adjusting self feeders so that a majority of the feeder bottom is visible is advisable. It may be advantageous to deliver smaller amounts of feed to help minimize feed waste caused by refused feed that gets stale and needs to be discarded. This advantage has to be weighed against the cost and time to deliver feed. If you total all the feed waste from storage to consumption by the animal it would not be unheard of to have 30% or more loss on high forage and high moisture feeds used in a cow-calf herd, most of which would be in storage and feeding losses. A goal would be to get that waste down to 10% or less.

Producers need to focus in on areas where they observe higher feed loss and then determine how much feed is being wasted. Some waste may be controlled with little or no extra out of pocket cost, while other methods may require more expense. Pushing the pencil to determine the cost of waste versus the expense to reduce the waste is important. High feed costs justify additional expense in reducing feed waste.