

Determining Quality

Feedstock makes a difference in feeding distillers' grains.

by Kay Ledbetter

When it comes to using distillers' grains in finishing rations of High Plains cattle, a Texas AgriLife Research scientist says the type of grain used makes all the difference.

Jim MacDonald, AgriLife Research beef nutritionist at Amarillo, says there has been some skepticism about using distillers' grains, a byproduct of ethanol processing that can be used for animal feed, in his region. "I believe we can do it successfully, provided we have distillers' grains that are equivalent in quality to those used in the North Plains states," he says.

Two years ago, MacDonald began investigating the dramatically different animal performance responses observed in the Northern Plains and Southern Plains and to determine how to successfully incorporate distillers' grains into his region's finishing rations.

"There are two obvious differences in research conducted in those two regions,"

Feeding & Feedstuffs

he says. "Researchers in the Northern Plains tend to use dry-rolled corn, and in the Southern Plains they use steam-flaked, corn-based diets."

Additionally, he says, researchers in Nebraska and other Northern Plains states utilized distillers' grains derived from corn; whereas the southern research included distillers' grains derived from sorghum.

Putting it to the test

MacDonald conducted three performance trials: two using corn-based distillers' grain shipped in from a Nebraska plant and the third utilizing sorghum-

derived distillers' grains that were similar to those used in research previously conducted in this region.

"Our study in feeding sorghum distillers' grain at 25% of dry matter (DM) showed the energy value for that product was 73% of the value of steam-flaked corn," MacDonald says. "In general, that fits with previously conducted research at Texas Tech and West Texas A&M."

Alternatively, he says, the research conducted with corn-derived distillers' grains from Nebraska would suggest the energy value was roughly equivalent to steam-flaked corn, which agrees with the northern data where distillers' grains were fed in steam-flaked diets.

"So what our observations are showing us is there are large variations in the energy value of distillers' grains derived from different cereal grain sources, similar to the differences in energy values of the cereal grains themselves," MacDonald says.

Another competition for feedstock:

Ethanol coproducts eyed as fillers in plastics

A coproduct of ethanol production could be used as a non-petroleum-based filler in plastics, based on preliminary studies by Agricultural Research Service (ARS) scientists and their cooperators.

The ethanol coproduct, called distillers' dried grains with solubles (DDGS), has a high fiber content and a molecular structure suitable for binding — two attributes that make it a candidate as a filler in plastics, according to ARS agricultural engineer

Kurt Rosentrater. Rosentrater is based at the ARS North Central Agricultural Research Laboratory in Brookings, S.D.

He conducted the research with Robert Tatara, a professor at the Northern Illinois University (NIU) Department of Technology, part of NIU'S College of Engineering and Engineering Technology. The researchers compressed molded blends of DDGS and phenolic plastic resin (ranging from 0% to 90% DDGS) and found that DDGS concentrations between 25% and 50% worked best as fillers in plastics.

These findings were published recently in the *Journal of Polymers and the Environment* (JPE). The preliminary study yielded only limited data on the resulting physical properties of the various DDGS/plastic blends, so follow-up tests are currently under way. The data could then be used to develop new bio-based manufactured products.

Fillers such as clay, talc, glass, paper and metals are commonly used in plastics to increase strength and to reduce costs by reducing the amount of actual plastic resin used. Using bio-based fillers such as bamboo, kenaf, corn stover, soybean hulls or even chicken feathers is receiving increased attention as a way to use less petroleum in plastic products. Both DDGS and distillers' dried grains (DDGs) are candidates for use as biofillers for plastics.

— by Don Comis, ARS News Service



► Tons of distiller's dried grains being held in storage at the ethanol plant in West Burlington, Iowa.

There will be a place for all of the different types of distillers' grains produced, but the producer needs to know what the energy value is and the product needs to be priced appropriately, he says.

"Additionally, our work with distillers' grains in different corn-processing methods would indicate producers are able to retain the energetic advantage of flaking corn in diets containing distillers' grains," he says.

For decades, feedyards in the Southern Plains have flaked corn to increase the amount of energy, MacDonald explains. The question was, "If you add distillers' grains to the diet, will there still be an advantage to

flaking the corn?" His research shows there is still an advantage.

MacDonald says another important thing for producers to understand is that distillers' grains from each plant may be different, so it is important to have a relationship with the provider of distillers' grains.

"Make sure they are willing to make you aware if they are making any changes to the process," he says.

Data is being developed by MacDonald and other researchers concerning the effects of changes in the distillers' grain processing.

"The more they understand what goes on in that ethanol plant, the better

chance they'll have of accurately valuing the product," he says. "Clearly the most important question is what cereal grain is being used. But they also need to know about control measures for things like sulfur content and [if] the solubles [are] being added back at a consistent rate."



Editor's Note: *Kay Ledbetter is a communications specialist for the Texas AgriLife Research and Extension Center in Amarillo, which supplied this article.*