

Pioneer IndustrySelect® Program

The Pioneer IndustrySelect® Program makes it easy for our customers to identify high-performance Pioneer® brand seed products with grain traits that target specific end-use market needs. To become IndustrySelect seed products, hybrids undergo extensive evaluation for end-use suitability. Growers get high-yielding, agronomically sound seed products to produce grain that end users value.

The Pioneer IndustrySelect Program ... Linking the Seed to the End-Use Need®.

Crop	Market	Trait	Benefit
Corn	Corn Refining/Wet Milling	High Extractable Starch (HES) Corn	2 percent higher starch yields than industry average
		Waxy (WX) Corn	Nearly 100% amylopectin
	Dry-Grind Ethanol	High Total Fermentables (HTF) Corn	Up to 4% greater ethanol yield over commodity corn
		High Available Energy (HAE) Corn	Enhanced digestibility energy
	Pork/Poultry Feed (Monogastrics)	Yellow Food-Grade Corn (YFC)	Superior alkaline cooking or dry milling properties
White (WH) Food-Grade Corn		Color, superior alkaline cooking or dry milling properties	
Soybean	Food Grade	Clear Hila Soybeans	Superior food grade properties
	Soybean Processors	Variety Protein and Oil Characterization	Improved protein and oil content for food and feed market
	Food Processors/Food Service Providers	Low Linolenic Acid Content	Healthy oil with improved flavor stability and reduced need for hydrogenation

Ethanol production is rising across the Corn Belt, which is increasing the amount of the major co-product — distillers dried grains with solubles (DDGS). This product can be of high value as a livestock feed ingredient, but livestock producers are starting to demand improvements in consistency.

According to the University of Minnesota, dry-grind ethanol plants produced more than 7 million metric tons of distillers dried grains with solubles (DDGS) in 2005. Historically, most of the DDGS produced has been fed to cattle, but in the past several years, researchers have been evaluating its nutritional value and feeding recommendations for swine and poultry.

Several U.S. universities are conducting DDGS research (see table).

The University of Minnesota reports considerable variation in DDGS quality, nutrient composition and nutrient digestibility among sources.

“The type of plant and the process, as well as variations in corn inputs, result in differences in nutrient concentrations,” says Jerry Shurson, a University of Minnesota Department of Animal Science professor who specializes in swine nutrition.

“Different ethanol production processes as well as different drying temperatures and types of dryers can affect nutritional quality,” Shurson says.

He cites one ethanol plant that’s making a DDGS with high protein levels, but lower fat and phosphorus levels than other ethanol plants. Some plants perform a partial degerming of the corn before it goes to the fermenter. This lowers the fat content of the DDGS. Another ethanol plant is burning the solubles as fuel, which reduces the fat and phosphorus

content of the DDGS.

Shurson’s advice: Livestock producers should request the complete nutrient profile of the DDGS they plan to use.

“If you have confidence in the nutrient content of the feed ingredients, you can balance the ration,” he says. He warns livestock feeders that new plants and those expanding capacity may produce inconsistent quality ingredients until the process stabilizes. Once up and running, these plants tend to produce a stable product unless the plant tweaks the process.

Watch for darker-colored DDGS. This may indicate lower lysine digestibility, which is a concern for swine and poultry. “Color has become a quality criterion for DDGS, particularly when fed to monogastric animals,” Shurson reports. Lighter-colored “golden” DDGS is commanding a higher price.



Photo courtesy of Jerry Shurson, University of Minnesota.

Distillers dried grains with solubles vary in color. A darker hue generally means lower lysine digestibility — a negative for poultry and swine.

Improving consistency in the field

One way to improve DDGS quality consistency might be to produce ethanol from fewer corn hybrids, Shurson says. In theory, a single hybrid type would provide less variation in nutrient content. For instance, processing only hybrids with high total fermentables (HTF) should improve nutrient consistency.











Corn growers who own ethanol plants could enhance profit potential by working to improve the consistency of the ethanol production process. Using uniform ingredients should translate into more reliability of DDGS nutrient quality. ▶

Consistency improves value of ethanol co-products

DDGS

DDGS nutritional research activity

Universities are studying use of distillers dried grains with solubles (DDGS) for various species of livestock.

University of Minnesota				
University of Georgia				
University of Illinois				
University of Nebraska				
Iowa State University				
South Dakota State University				

“DDGS is an economical partial replacement for corn, soybean meal and dicalcium phosphate in livestock and poultry feeds,” Shurson says. Before 2001, 97 percent of DDGS used for feed went into ruminants. Today, swine consume about 15 percent of the DDGS pie, while poultry is responsible for just less than 5 percent.

To produce DDGS, ethanol plants blend and dry condensed distillers solubles with distillers grain fractions. About 60 percent of DDGS are sold dry and 40 percent sold as wet products, with nearly all the wet product going to feedlots for beef cattle.

While the grain fraction is high in protein, the soluble fraction contributes fat and phosphorus to DDGS. The ratio at which the ethanol plant combines these by-products differs, resulting in nutrient inconsistencies among plants. By definition, at least 75 percent of the distillers solubles must be added to the distillers grains before it can be called DDGS.

“For swine, the phosphorus in the DDGS is a major benefit,” Shurson reports. “Much of the phosphorus in corn is unavailable to pigs and remains in the manure, posing environmental challenges.” The phosphorus in DDGS is 90 percent available, compared to 15 percent in corn.

This means swine producers can drop expensive dicalcium phosphate supplements from the ration while benefiting the environment. Half of the cost savings DDGS delivers in swine is due to lower phosphorus supplementation levels, Shurson says.

Unfortunately, the high phosphorus levels can be a negative for cattle. When DDGS makes up 40 percent of dry matter intake, cattle ingest too much phosphorus, which they excrete in the manure.

DDGS is valuable in cattle rations largely because it delivers 110 percent to 115 percent the energy level of corn. In swine, the energy level of DDGS is similar to corn. In poultry, DDGS delivers only 85 percent the energy level of corn.

Make good buying decisions

“Know your source if you’re feeding DDGS to livestock,” Shurson advises. You may need to test rations more frequently. Ask the supplier for a recent nutrient profile of product. Then you can formulate diets with your nutritionist based on these values.”

Shurson says reporting of nutrient values by ethanol plant will improve. It’s part of a quality assurance program some plants are implementing now.

For more info on DDGS, visit the University of Minnesota website at www.ddgs.umn.edu/. ■



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Trait specifics on reverse side.