

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
	Pork/Poultry Feed (Monogastrics)	High Available Energy (HAE) Corn	Enhanced digestibility energy
	Food Grade	Yellow Food-Grade Corn (YFC)	Superior alkaline cooking or dry milling properties
Soybean	Food Grade	White (WH) Food-Grade Corn	Color, superior alkaline cooking or dry milling properties
	Soybean Processors	Clear Hila Soybeans	Superior food grade properties
	Food Processors/Food Service Providers	Variety Protein and Oil Characterization	Improved protein and oil content for food and feed market
		Low Linolenic Content	Healthy oil with improved flavor stability and reduced need for hydrogenation

A universal measure: Foundation for ethanol profits

When the ancient Egyptians erected the pyramids, they didn't just start tossing stones of any shape or size together. They understood the importance of accurate measurement to get the desired results.

Ethanol plant managers are starting to learn the importance of measuring the building blocks they use to produce fuel. As they begin to see value in specific grain traits, they will reject — or pay less for — grain that doesn't meet their standards.

Consistent and universal measurement of grain quality is key to rewarding growers for their grain and providing ethanol plants the ability to optimize profits. The industry needs a universal measurement tool.

That's why Pioneer developed its whole-grain near-infrared (NIR) assay technology. This tool can help the ethanol industry determine the relative value of grain for ethanol production.

"We characterize thousands of grain samples every year across multiple locations with this NIR assay," says Doug Haefele, Ph.D., Pioneer senior research scientist. "The data we're collecting shows an ethanol yield variation of up to 7 percent among the different hybrids tested." This can make a substantial dif-

ference in an ethanol plant's profitability.

Fair comparisons

Pioneer is offering this proprietary assay as a way for the ethanol industry to compare apples to apples and reward growers who provide traits needed for ethanol production. It's a good bet those ancient workers hewing slabs of limestone for the pyramids were working on the same measurement scale as the engineers

"The industry needs to work toward settling this measurement issue and let growers and their seed companies compete on the value of the products they offer."

who were building the structures. Likewise, growers and procurement managers at ethanol plants will need to be on the same page to meet production goals.

"Without a standard, you might be measuring traits with a yardstick in one instance and a meter stick in another," Haefele says. "It's difficult to fairly determine the value of corn grain for a specific use, like ethanol production, without a standard measurement tool."

The NIR assay identifies levels of high total fermentables (HTF), the trait best suited for dry-grind ethanol production.

"Total fermentables" refers to the sum of all starch and simple sugars that can be metabolized by the yeast cells to produce ethanol. The other grain traits desirable for dry-grind ethanol production include low levels of foreign matter, molds and diseases.

Building a track record

"The Pioneer® brand hybrids we're analyzing have reached the marketplace because they've proven their yield potential," Haefele notes. "Now we're taking the next step, determining the grain characteristics of each of these hybrids to understand their value for specific end-use markets."

To date, Pioneer researchers have identified 121 Pioneer brand hybrids with the HTF trait, suited for above-average performance in ethanol production.

"The industry needs to work toward settling this measurement issue and let growers and their seed companies compete on the value of the products they offer," Haefele says.

As the ethanol industry adopts universal measurements of grain quality, it's building a solid foundation for continued success in fuel production — a foundation even the ancient Egyptians might envy. ■



Hybrids make a difference

Ask your Pioneer sales representative some key questions about ethanol.

The current 81 U.S. ethanol plants produce more than 3.5 billion gallons of ethanol a year. With another 16 plants under construction, capacity soon will grow to 4.4 billion gallons a year. Federal energy legislation could push demand to 8.0 billion gallons a year by 2012, likely spurring additional plant construction.

This means more growers soon may find themselves able to take advantage of the 5- to 10-cent per bushel basis advantage available to those within a 35- to 40-mile radius of such facilities. If you're in this group, ask your Pioneer sales professional for additional information related to the following key ethanol-production issues.

1. What can I do to produce more ethanol per acre? Isn't corn corn?

Pioneer has compiled data from over 80,000 samples and found a variance of up to 7 percent in ethanol yield from varying corn hybrids. Individual ethanol plants are more likely to see a 1 percent to 4 percent variance. The 7 percent figure is based on every Pioneer hybrid tested, regardless of maturity.

2. How do I select the hybrids best suited for ethanol production?

Pioneer research shows hybrids with high total fermentable (HTF) levels perform best at yielding ethanol in dry-grind ethanol production. To date, 112 Pioneer brand hybrids have been identified with the HTF trait. An additional 20 hybrids have been identified as offering

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high extractable starch (HES), a trait suited for wet-milling ethanol plants.

Pioneer researchers look at every hybrid sold in each corn relative maturity zone and establish a mean numerical ranking for the trait. Products above the mean are given the HTF designation.

The key to hybrid selection for ethanol production is to first select those products that perform best on your land, regardless of traits. In the case of ethanol, the grower should then look for the HTF or HES hybrids contained in that list.

3. Ask your sales professional about opportunities for growing corn for dry-grind or wet-milling ethanol production in your area.

In the dry-grind process, the entire corn kernel is ground into coarse flour, then slurried with water to form a "mash." Newer technology, being incorporated into new and many existing facilities, allows for removal of the germ from the kernel before grinding. The mash is cooked, treated with enzymes, fermented and distilled. In addition to ethanol, this process produces distillers grains (a high-protein livestock feed) and carbon dioxide. When retained, the carbon dioxide serves as a food and industrial product.

Both physical and chemical methods can separate corn-kernel components in wet milling. The wet-milling process converts corn starch into syrups and ethanol.

For help deciding if either of these options is viable for your operation, see your Pioneer sales professional and mention this article. ■



Get the details on dry-grind ethanol at www.pioneer.com/growingpoint Key> 4806

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