

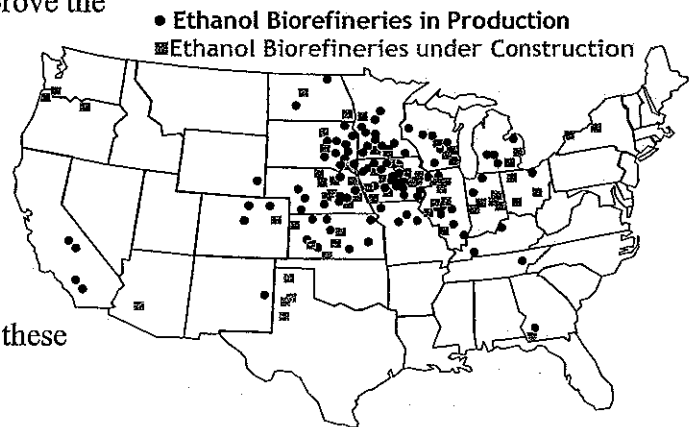
**Comments of Renessen LLC to the Iowa Animal Feeding of Distillers Dried Grains  
Study Committee  
Mark Hulsebus, Renessen-Cargill Animal Nutrition Project Lead  
September 13, 2007**

Reessen LLC appreciates the opportunity to provide comments to the Animal Feeding of Distillers Dried Grains Study Committee of the Iowa House of Representatives. My name is Mark Hulsebus. I am a manager in Cargill's animal nutrition consulting business, located in West Branch, Iowa. I work on contract for the Renessen joint venture. Renessen LLC is a business venture between Monsanto Company and Cargill focused on developing new technologies for processing corn to improve the efficiency of dry-grind ethanol manufacturing plants and to enhance the value of the co-products produced in that process.

America's desire to reduce its dependence on foreign oil and lower greenhouse gas emissions has accelerated the nation's quest for producing more renewable fuels. Today there are more than 120 ethanol plants operating in the U.S. and as many more are under construction or planned. In 2006, the U.S. produced roughly 5 billion gallons of ethanol. Nearly one-fifth, or some 2.15 billion bushels, of the U.S. corn crop was used to produce this fuel. The U.S. Department of Agriculture estimates that 3.4 billion bushels of corn will be made into ethanol in 2007. (RFA, 2006; USDA, 2006). Iowa has 29 ethanol refineries with the capacity to produce nearly 2 billion gallons annually. There are 18 ethanol refineries under construction or expansion that will add nearly 1.4 billion gallons of annual capacity in the state. Over 20 percent of the Iowa corn crop is expected to be delivered to an ethanol plant next fall. (Iowa Renewable Fuels Association, 2007).

The average corn yield across the U.S. in 2006 was 149 bushels per acre. The USDA anticipates yield increases of 2-5 bushels per acre in 2007. If you examine the 30-year trend line for corn yield increases in the US, and you add technical advances from molecular breeding and biotechnology, it is possible to expect corn yields to double today's harvest and reach nearly 300 bushels per acre in the next 25 years. (ProForma, USDA 2007).

It is our belief that as the ethanol industry moves from a growth to an optimization phase, many technological advances will dramatically improve the efficiency of the process. These changes will take place across the value chain in areas such as development of enhanced corns for fermentation, membrane technology for ethanol purification, and cellulosic enzymes for higher ethanol yields per bushel. All these advances and others will result in changes to the co-products. We believe that the new technology developed by Renessen, called the EXTRAX™ system, is one of these step changes.



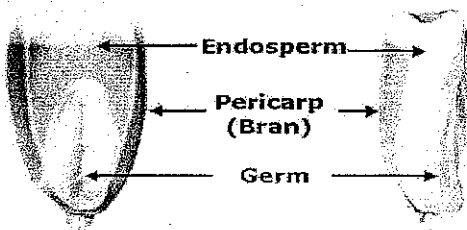
As I mentioned, two agricultural industry leaders, Monsanto and Cargill, joined forces several years ago to form Renessen. Renessen brings together Cargill's expertise in animal nutrition and grain processing with Monsanto's capabilities in plant breeding and biotechnology research and development. With the ongoing expansion of ethanol capacity in the U.S., new technology is needed to help meet the multiple demands on corn. Renessen's process research focus on nutrient recovery has resulted in a novel grain processing technology, the EXTRAX™ system, which provides important benefits to both the biofuels and livestock industries.

The Renessen EXTRAX™ system, which is designed to operate on the front end of a dry-grind ethanol plant, will enable the plant to produce four products on site, including:



1. Food-grade corn oil
2. ECORN™, a new nutrient-rich monogastric feed that can replace corn in swine rations
3. A highly fermentable ethanol medium
4. EPRO™, an enhanced distiller dried grains

Let me briefly explain how the  
**EXTRAX System Creates a Better Feedstock for Ethanol Production**

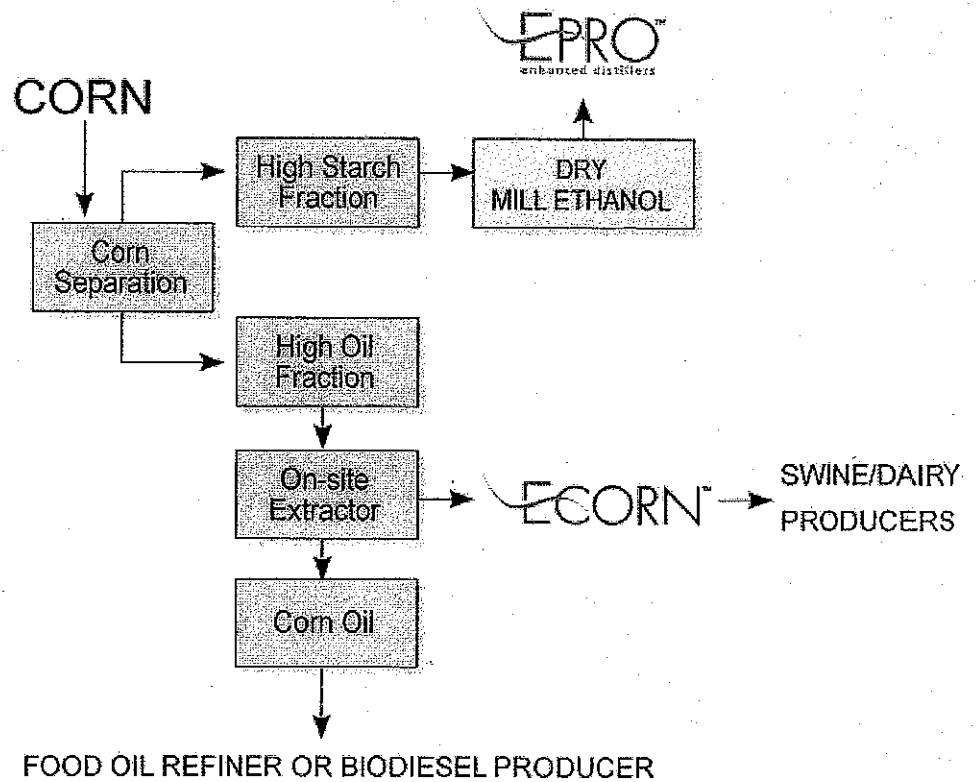


Corn is largely composed of starch, which can be hydrolyzed, or broken down, into sugars and fermented into ethanol using yeast.

Rather than using the whole corn kernel, the EXTRAX™ system separates corn into two streams:

- 1) A high-starch fraction largely consisting of endosperm, and;
- 2) a high-oil fraction. The high-starch fraction is highly fermentable and is used to produce ethanol. The remaining high-oil fraction is sent through an oil extraction process in which food-grade oil is recovered, and a new corn-replacement meal is created.

The new EXTRAX™ process, which can use conventional dent corn or nutrient- and energy-rich corn developed through biotech and advanced breeding technologies, results in increased ethanol yields and decreased energy consumption in the ethanol plant.



### A Highly Fermentable Starch Fraction

The high-starch fraction created through the EXTRAX™ process increases fermentation capacity by 15 percent and provides faster fermentation and higher ethanol concentrations. Renessen's fermentation studies also show a 25 percent increase in centrifuge capacity, with fewer solids and easier separation and a significant decrease in fusel oils.

### EPRO™, an Enhanced DDGS

Renessen's EXTRAX™ process decreases the levels of non-fermentables in the raw material and reduces the amount of dried distillers grains with solubles (DDGS) created in the ethanol process by up to 40 percent. With much of the oil removed, the DDGS will be drier and will result in improved flowability and significant savings in energy, handling and drying costs.



Renessen's DDGS product, called EPRO™, is an enhanced form of DDGS. It is high in protein nutritional value with 40 to 50 percent protein content, less oil and lower phosphorous levels than traditional DDGS. Renessen is conducting ongoing feed trial evaluations of inclusion of EPRO™ in swine, poultry and dairy rations.

DDGS Comparison	Oil	Protein	ADF	NDF
Typical DDGS	10%	27%	8%	30%
EPRO™ Enhanced DDGS	2.5 - 4%	40 - 50%	7 - 11%	15 - 25%

## ECORN™ Replaces Corn in Swine Rations

The high-oil fraction of the corn is sent to an extractor, where two valuable co-products are produced. ECORN™ is a new extracted meal product that replaces up to 100 percent of the corn used in swine rations. Renessen is working with seven of the 10 largest swine integrators in the U.S. to conduct nutritional feed studies. A total of 7,500 hogs are now included in these feed trials.



Nutrient Composition on Dry Matter Basis	Corn	ECORN™
Dry matter	86.7%	89.5%
Crude protein	9.0%	13.7%
Fat	3.3%	1.1%
NDF	6.8%	13.4%
ADF	1.6%	3.0%
Ash	1.2%	2.9%
Gross energy, kcal/kg	4,479	4,437

## Food Grade Corn Oil

The EXTRAX™ system is able to extract about 60 percent of the corn oil out of the kernel, yielding approximately 1.25 pounds of oil per bushel of corn. This high-quality, food-grade corn oil can be refined as a low trans-fat solution for human consumption, or used in the production of biodiesel fuel.

## Eddyville, Iowa Pilot Plant

Renessen has invested \$15 million to build a fully operational integrated pilot plant at Cargill's BioProcessing Center Campus in Eddyville, Iowa, to demonstrate the new EXTRAX™ technology. This system is designed to be added on to the front end of a dry-grind ethanol plant and can be specifically designed to be retrofitted to existing ethanol plants or integrated into new plant construction plans.

Since its start-up in March 2007, the pilot plant has processed more than 650,000 bushels of corn. From this, some 25,000 pounds of food-grade corn oil and 4,000 tons of feed have been produced. The pilot plant has the ability to process more than 300 tons of corn per day.

The EXTRAX™ system uses proven Buhler and Crown manufacturing equipment at key points throughout the process. Buhler is the preferred equipment supplier of EXTRAX™ processing system. The Buhler MHXM Degerminator separates the starch from the germ to create a high-starch fraction for ethanol production and a high-oil fraction.

## **New Corn Germplasm Developments**

The current EXTRAX™ system is being evaluated using commodity dent corn. Monsanto is developing new nutrient and energy-rich corn hybrids that will enhance the value of the system. New hybrids have been developed with increased oil content and amino acid levels. The new biotech trait, high-lysine corn, has been approved in the U.S. and several export countries. Lysine is an essential amino acid necessary for growth and development in livestock. We believe that the lysine will be concentrated in the ECORN™ feed product, thereby reducing the need for supplemental lysine in the monogastric ration. These enhanced quality traits will be integrated into corn hybrids suitable for Iowa production areas around future EXTRAX™ facilities.

## **So what are the next steps?**

The EXTRAX™ pilot plant in Eddyville, Iowa has been in full operation since spring 2007. Renessen is currently conducting negotiations with ethanol and livestock producers for licensing rights to the EXTRAX™ system. The feed co-products produced in the pilot plant are being used for livestock feed trials with swine, dairy and poultry operations. In addition to feeding studies with ECORN™ at major pork production facilities in the US, new studies are underway with EPRO™ at dairy and poultry operations to evaluate their inclusion rate in the feed ration.

We anticipate completing our initial licenses with ethanol producers in the next few months, with the first plant construction beginning in early 2008 at locations in Iowa.

Thank you for your attention, and I look forward to your questions and comments.