Livestock Industry Adjusting to Lower Corn Oil in Distillers Grains

Ethanol producers are adding corn oil extraction technologies to their facilities in increasing numbers to garner more income from byproducts. By extracting the oil they can earn 40 cents per pound compared to the 10 cents per pound price they receive for Distillers Dried Grains and Solubles (DDGS). That could equate to $6.6 million in additional value for a 100 million gallon ethanol plant, according to an article in Feedstuffs.

About a third of dry-grind ethanol plants have already incorporated corn oil extraction technology in their facilities and it’s estimated that half the plants will employ oil extraction in the next couple of years.

Oil extraction changes the nutrient content of the resulting DDGS. By using centrifuge technology, a third of the oil can be extracted from the stillage, reducing the oil content of DDGS from the typical 10.7 percent oil to 7.5 percent oil. This is creating concern and questions in the livestock industry.

University of Minnesota Animal Science Professor Jerry Shurson has been fielding many calls and e-mails regarding this topic. He notes the most expensive component in animal feed is energy followed by protein, and that DDGS with 10 to 12 percent oil are a very high source of energy and significant protein source. The impact of reduced oil content in DDGS will vary by species because the energy value of DDGS is different for each species, he says.

DDGS provide about 120 percent of the energy value of corn in cattle diets, 100 percent in swine diets and 85 percent in poultry diets. As ruminants, cattle can get energy from the fiber in DDGS, while monogastric species cannot.

DDGS inclusion rates vary by type of animal. Feedlot beef cattle diets can include up to 40 percent distillers grains, dairy cows can be fed up to 20 percent DDGS, swine diets up to 40 percent and poultry diets 5 to 10 percent (all on a dry matter basis). Overall, 80 percent of DDGS are fed to dairy and beef cattle with about 10 percent fed to swine, 9 percent to poultry and 1 percent to other animals.

New corn oil extraction technologies employed by ethanol plants are changing the nutrient profile of distillers grains.DDGS is still an attractive energy source for beef cattle even if two or three percentage points of oil is taken out, because it’s already higher in energy than corn,” says Shurson.

“DDGS is still an attractive energy source for beef cattle even if two or three percentage points of oil is taken out, because it’s already higher in energy than corn,” says Shurson.

The University of Minnesota recently completed a feeding trial, funded by the Minnesota Corn Research and Promotion Council, where pigs were fed 11 sources of DDGS with varying oil content. “Essentially, we learned that the oil content is not as nearly as predictive of the metabolizable energy value as the fiber content is,” says Shurson. “Many people are surprised that a two to three percentage point reduction in fat is not having that great of an effect on energy.”

There are 1,550 Kilocalories of metabolizable energy (ME) in a pound of DDGS. The U of M swine trial data shows fat content is a very poor predictor of ME content, and a measure of fiber gives a much better estimate of actual ME content of reduced oil DDGS.

Shurson will soon be releasing prediction equations that swine producers and nutritionists can use to determine metabolizable energy levels of DDGS from samples they have sent in for lab analysis.

POULTRY

With funding support from several ethanol industry sources and the Minnesota Corn Growers, the U of M will conduct a similar trial for poultry, where the impact on turkeys and broilers will be determined.

“In general, the removal of three percentage points of oil from DDGS will have some impact on dairy and beef, more impact on pigs and the most impact on poultry,” says Shurson. “The ethanol industry will be sorting out how they are going to price this reduced fat distillers grains. I think buyers will want to negotiate a minimum fat content for DDGS.”
AgMotion is an integrated holding company whose trading and risk-management operations meet the diverse and changing needs of agri-business. Through its three operating units, AgMotion combines physical commodity trading capabilities with risk-management expertise all powered by industry-leading, proprietary information technology to create value for customers. In 2010, AgMotion was ranked as the 46th largest private company in Minnesota by Twin Cities Business Journal, a long journey from its roots in the 90’s as a two-person trading company located above WA Frost’s bar in St. Paul.

AgMotion operates through three primary subsidiaries: US Commodities, LLC; United Bio Energy, LLC; and Northstar Commodity Investment Company, LLC. Based in Minneapolis, MN and employing about 75 employees. US Commodities, LLC is a physical commodity merchandising company serving virtually every segment of agri-business. They do business on six continents. The company trades dried distillers grains and other dairy feed inputs, whole grains, small grains, organic grains, rendered products, forest products, containerized grains for export, fats and oils, and other specialty ingredients. US Commodities’ commitment to customer service and its financial strength make it a trusted and reliable trading partner for customers and suppliers around the globe.

Northstar Commodity Investment Company, LLC is a risk-management, market advisory and derivatives brokerage firm serving the needs of corn and soybean producers, livestock producers and commercial processors domestically and internationally. Northstar also operates a managed futures business for financial investors seeking portfolio exposure to commodities. Northstar’s analysts have been featured on CNBC and Linder Farm News Network and are regularly sought for market commentary by major news wires and ag-focused publications.

United Bio Energy, LLC provides distillers grain marketing, risk management and group enzyme procurement services to the ethanol sector. Based in Wichita, KS, United Bio Energy’s (UBE) goal is to help its ethanol production partners be more competitive and profitable. UBE was acquired by AgMotion in 2007 from US Bio Energy.

Q & A with Rolf S. Peters, President and CEO of AgMotion: How do the three subsidiaries work together under the AgMotion umbrella? There are some synergies between the three. US Commodities has a desk that often will hedge grain prices between the growers. This works in step with Northstar. Also, United Bio Energy does a lot of marketing for Distillers Dried Grains and Solubles (DDGS) for the six partner ethanol plants. They are a marketing channel for this and see a lot of distribution over in the Pacific Rim.

Are there market trends that are affecting the areas of trade and investment this year? We saw a lot of healthy and positive trends within the macro external environment this year – there were a whole lot of things that went right. Trends in the market didn’t see a fall-off in export demands and there is Chinese tariff on DDGS, so that has kept the market flowing. Across the spectrum, the sectors that we sell into are profitable and the cost of funds were as cheap as we’ve seen them in 25 years. The land prices were strong, dairy profitability was good, hogs are rebounding, and exports were steady. Probably the most noteworthy for Minnesota and the upper Midwest is the organic sector, which has recovered after the financial crisis.

Are you seeing or anticipating any changes because of the end of the volumetric excise tax credit? AgMotion is heavily involved in the ethanol industry and we support domestic ethanol. We’re very disappointed to see the end of the tax credit, but the trade has done a good job adjusting.

AgMotion is very excited about the US Grains Council Export Exchange 2012 Conference. This year it will be held in Minneapolis at the Marriott City Center on October 22-24, 2012. We expect to see a wide variety of products bringing in many foreign buyers, including end-users of DDGS and coarse grains.
New technology developed by a researcher at the Natural Resources Research Institute (NRRI) at the University of Minnesota - Duluth promises to improve ethanol's net energy balance and enhance the profitability and viability of ethanol plants.

NRRI chemist Pavel Krasutsky has extracted additional value from Distillers Dried Grains and Solubles (DDGS), the low-value co-product of corn ethanol production. With his patented extraction process, Krasutsky uses ethanol as a solvent to separate oil, free fatty acids, zein and solubles (primarily glycerol) from fiber and proteins. Biodiesel is produced from the oil and free fatty acids, while second-generation ethanol is produced from the glycerol using a biotransformation technique developed by GlycosBio Technologies of Houston, Texas.

About a third of the U.S. corn crop is used for ethanol production. Our state has 21 ethanol plants with the capacity to produce 1.1 billion gallons of ethanol. Minnesota produced 3 million metric tons of distillers grains last year. Ethanol production is the largest in-state use of corn, utilizing twice the amount of corn consumed by Minnesota livestock. However, Minnesota corn use for ethanol is exceeded by the amount of corn that is exported from the state.

Using the NRRI Integrated Technologies, mentioned above, the distillers grains will yield an additional 20 percent of biofuel (half ethanol and half biodiesel) from the same amount of corn. A 50 million gallon per year ethanol plant can pump out an additional 5 million gallons of ethanol and 5 million gallons of biodiesel. It also yields a high-protein feed (HPDG) and zein, a high value food preservative. All of this could provide about $16 million extra profit for a plant, according to University of Minnesota Extension economist Doug Tiffany.

NRRI, along with the Initiative for Renewable Energy and the Environment at the University of Minnesota, and the Minnesota Corn Growers Association (MCGA) have invested more than $450,000 in the research so far.

Pilot scale production got underway last year at Crown Iron Works in Minneapolis, a leading supplier of extraction technology and refining equipment. Preliminary results indicate additional capital costs for equipment and installation will run about $32 million in order to complement a 50 million gallon per year dry-grind ethanol plant. The equipment can be added to the plant without interfering with other plant processes.

IMPROVING PROFITS

Economic modeling shows that NRRI Integrated Technologies can improve the financial rate of return from less than 1 percent to between 9 percent and 16 percent on ethanol plants operating with more than 50 percent debt. Debt-free plants would improve their rate of return from the current 11.4 percent to between 20 percent and 30 percent, depending upon the market demand for the HPGD.

"With the blender’s credit gone, this model of ethanol production becomes very important," says Riley Maanum, MCGA research and project director. "Creating more products and income streams from the DDGS will help determine the net energy balance by producing 20 percent more biofuel without any additional corn.

FEED TRIALS PLANNED

Feed trials will be undertaken in 2013 to help determine the market price and demand for the resulting high-protein, lower fat distillers grain. The feed would have from 35 percent to 40 percent crude protein content and about 2 percent fat content. The extraction process can be adjusted to customize the fat content, if desired. The extraction process also removes water, antibiotics and mycotoxins yielding a high quality, concentrated, flowable product with a long shelf life.

The process could be commercially available in two years. Brian Garhofer, an independent contractor working on the project says, "This could keep ethanol plants operating on a profitable level, even in hard times. We have some leading industry players very interested in this."
Two Policy Luncheons Remain: Still Time to Register

During the Minnesota Legislative Session, Agri-Growth hosts policy luncheons to discuss timely issues, network with agriculture contacts, and get to know legislators, members of Congress, and special guests. The first Policy Luncheon was held this month and featured an overview of the redistricting process with the discussion led by Representative Sarah Anderson, House Committee Redistricting Chair.

The March luncheon will feature House Speaker Kurt Zellers. Rep. Kurt Zellers (R - Maple Grove) is the Speaker of the Minnesota House of Representatives. Zellers was born and raised on a farm in Grand Forks, North Dakota. He became an assistant majority leader in 2003 and, after House control was won by the Democrats in the 2006 elections, continued as an assistant minority leader. In 2009, Zellers was elected by the House Republican Caucus to succeed Rep. Marty Seifert as minority leader and in 2010 Zellers was selected to serve as Speaker of the Minnesota House of Representatives.

Attendees will hear from Senate Deputy Majority Leader Julianne Ortman at the April Luncheon. Elected in 2002 as a State Senator, Sen. Julianne Ortman (R - Chanhassen) currently represents the ten cities and eleven townships comprising District 34. Ortman is currently chair of the Senate Taxes Committee, the first woman in Minnesota history to do so. She is also a member of the Senate’s Judiciary and Public Safety, Rules and Administration, and State Government Innovation and Veterans committees. On January 3 Ortman was named Deputy Majority Leader by Majority Leader Dave Senjem. Ortman replaced Sen. Geoff Michel who lost his position following the resignation of former Majority Leader Amy Koch.

REMAINING POLICY SERIES LUNCHEONS:
• March 21, 2012 - House Speaker Kurt Zellers
• April, 18, 2012 - Senator Julianne Ortman

There is still time to register for either of the upcoming luncheons at policyluncheons2012.eventbrite.com. Luncheons are held at the Best Western Kelly Inn, with registration at 11:30 a.m and a buffet lunch at noon. Cost per luncheon is $25 for members and $30 for non-members.