IRRIGATION ADVANCES

Conserving water, energy and labor

FEATURE STORY
New pump stations save energy
Page 4

INSIDE
Focus on biofuels
Page 14
Pivot irrigation. Better ROI.
Versatile, automated and efficient, center pivots can be customized for a wide range of crops, field sizes and shapes. These systems are environmentally friendly since they reduce runoff and are constructed with 98% recyclable materials. In addition, easy-to-use control panels feature both English and Spanish languages.

To see how to improve your operation or find a local Zimmatic dealer, visit www.zimmatic.com.

° Farm and Ranch Irrigation Survey, 1998
* Chart costs are based on studies from the University of Nebraska: "Estimated Irrigation Costs, 1997"; "Estimated Irrigation Costs, 2001"; "Comparisons of Irrigation Distribution Systems"

PIVOT IRRIGATION SYSTEMS . . .

✓ Lower labor costs
Can cut labor by 50% with automated control.

✓ Reduce water usage
Use an average of 35% less water than flood systems.

✓ Reduce energy usage
Require 47% fewer pumping hours.

✓ Increase yields
Can substantially increase most crop yields.

Pivot irrigation – a proven choice
Gary Beiermann talks about the benefits of Smart Design.

**Q: Beiermann Agri-Systems helped develop Lindsay’s Smart Design. What makes it unique?**

**A.** Smart Design is a Windows®-based irrigation design system made exclusively for Lindsay dealers and growers. It works great for quickly and easily designing a pivot system for any field. Before Smart Design, we had to obtain field maps from government offices and draw in the pivot circles by hand. It would take hours to do this and even more if there were changes. Now, we have all of the field maps preloaded onto our computers and can design a pivot system for a grower’s individual field in a matter of minutes.

**Q: How do you use Smart Design for your customers?**

**A.** Typically I will sit down with a grower and have them work with me in designing a pivot system for their field. Other times, I can design the system using my laptop in my pickup while talking to the grower. I pull up the specific field maps from the U.S. Geological Service or Google™. These maps have incredible detail and can show the field boundaries, ditches, houses and outbuildings. What’s great about Smart Design is that it will design the largest pivot system for that field and show exactly how many acres will be watered, where the wheels will run and the overhangs. If a grower wants to move the circle 20 feet, Smart Design does that in seconds and shows different options and scenarios for the pivot. If the grower wants to water less in low spots, Smart Design will customize the system to meet that need.

**Q: What are the benefits to growers?**

**A.** In addition to customized designs for individual fields, Smart Design allows growers to look at all of the different scenarios and possibilities for their fields. It helps them see outside of the box and realize that there are many different ways to profit from a well-designed, custom-made pivot package.

**Q: Can you tell us more about your dealership?**

**A.** Our dealership is located in northwest Illinois, along the Illinois/Iowa border. We cover a 100-mile radius around Cordova where there is sandy to light soil. All of the irrigation in our area is from a good supply of groundwater, mostly for corn and soybeans, including lots of seed corn. My wife, Marie, and my brother, Mel, are actively involved in the dealership.
The Center Pivot Water Conservation Project

Maximizing a constrained water supply and helping center pivot irrigators in Nebraska and around the world

A new educational effort by the University of Nebraska-Lincoln Extension has been created to inform center pivot irrigation operators on best practices aimed at reducing water consumption.

The Center Pivot Water Conservation Project arose out of a partnership between irrigation companies, UNL Extension, the Nebraska Department of Natural Resources and the Nebraska Environmental Trust. This three-year project will be conducted statewide, with special emphasis on the Republican River Basin and Platte River Basin upstream of Kearney, Neb.

Lindsay Corp. of Lindsay, Neb., Valmont Irrigation of Valley, Neb., Reinke Manufacturing Co. of Deshler, Neb., and T-L Irrigation Co. of Hastings, Neb. will work with their dealers to hold educational sessions for center pivot operators.

“Our goal is to reach new people who may not be aware of the latest research on irrigation efficiencies, and the irrigation manufacturers’ dealer networks are helping to do that,” said Chuck Burr, project coordinator and extension educator for the UNL Extension-Phelps County.

“We want irrigators to become more efficient in how they apply irrigation water, and use rain and stored soil moisture. Pivots are inherently efficient in how they apply water, but I think there are effective ways to use pivots to supplement what Mother Nature gives us. This project provides new research and technology methods, including irrigation well pump tests and soil moisture sensors.”

A website has been created to help growers learn more about the Center Pivot Water Conservation Project. It includes the following resources:

• A guide to selecting sprinkler packages
• ETgage® site weekly data
• Reference ET, instructions and tools
• Water Optimizer – a decision support tool for growers with limited water
• “Reducing the Cost of Pumping Irrigation Water” – a video by Derrel Martin, UNL professor of biological systems engineering

“There are areas in the state of Nebraska facing water limits and pivots are the only means of accurately and efficiently applying water to the land,” said Wayne Choat, Program Manager of Engineering Services at Lindsay Mfg., LLC. “This project has applications to growers around the world and I encourage them to check out the project’s website to take advantage of the latest research on irrigation efficiencies.”

For more information, visit http://water.unl.edu/pivotproject.
Potato Growers Could Be Impacted by New Metam Sodium Monitoring Regulations

Potato growers in the Pacific Northwest are keeping a close eye on proposed metam sodium monitoring regulations from the U.S. Environmental Protection Agency (EPA). Metam sodium is a broad-spectrum fumigant used to control verticillium and some nematodes in potatoes. It converts to the gas methyl isothiocyanate (MITC) when it is applied to soil through irrigation systems.

Under re-registration documents, EPA is proposing risk mitigation measures that include buffer zones of up to 875 feet (267 meters). At 500 feet (152 meters), nearly 50 percent of the fields in Washington state would be affected, according to Chris Voigt, executive director of the Washington State Potato Commission. Three-quarters of Washington fields are treated with metam sodium, so the economic impact of buffer zones would be almost $75,000 of lost farm-gate value per field and $371,000 per field of lost economic value. Across the entire state, Voigt said, that would amount to $77 million in lost farm-gate value and $383 million in lost economic activity.

A Washington State University study is using air monitoring sensors to provide the first specific data for the Pacific Northwest to help EPA’s RED mitigations. The re-registration information that EPA has been using has all come from California data. The university has also been looking at ways to keep emissions down, such as adding drops and using low pressure drop lines.

EPA is expected to issue amended metam sodium label requirements by 2010 or 2011.

(Source: Spudman magazine)

FieldNET™ Receives International Ag Innovation Award

FieldNET, Lindsay’s web-based irrigation management system, won a 2009 SIMA Innovation Award during the 73rd SIMA International Agri-Business Show in Paris recently. FieldNET was recognized for its ability to save growers time and money with its advanced technology and easy irrigation monitoring system by a panel of judges made up of industry experts from six countries. The award was presented to Lindsay Europe.

The SIMA International Agri-Business Show is a large ag industry trade exhibition drawing hundreds of thousands of visitors from around the world.
When AJ Ochoa, a fourth-generation Othello, Wash. farmer pushed one button to start his new Watertronics® agricultural pump station, he became one of the first irrigators in the world to reap the benefits of a fully-integrated pump and center pivot water control package. Even more important to Ochoa, he began realizing immediate and substantial reductions in energy, water and labor costs.

Working with an integrated team of center pivot and water pump specialists from Lindsay and Lindsay’s newly-acquired subsidiary, Watertronics, Inc., Ochoa recently converted 1,000 acres (405 ha) of flood irrigated land to land irrigated by eight center pivots, all controlled from a single location by a new Watertronics agricultural pump station.

“"The energy, water and labor efficiencies of the new system are amazing," Ochoa says. "Originally, I had been looking at installing one 250-horsepower (253.5 metric hp) Variable Frequency Drive (VFD) water pump, but now I realize that was like dealing with technology from the past. The Watertronics pump station is extremely high-tech and yet simple to operate.”

Watertronics control technology is also available as an upgrade to any existing pivot, pump or pumping station, including VFD control and single-phase to three-phase electrical conversions.

VirtualVision™III
Touch screen control with easy-to-understand interface programming and quickview color graphics.
Watertronics, based in Hartland, Wisc., is a manufacturer of customized water pump stations, control panels and telemetry systems. According to Watertronics president Rick Reinders, the company specializes in Variable Frequency Drive control packages and the company's patented Electronic Butterfly Valve (EBV) pressure control.

“Our pump stations and control packages are ideally suited for the agricultural market,” Reinders says. “Watertronics and Lindsay have teamed up to provide growers a fully integrated pump and pivot control package, which is the first of its type in the industry.”

The advanced Lindsay/Watertronics controls are also available as an upgrade to any existing pivot or pump station.

AJ Ochoa’s farm is located in the Columbia River Basin and consists of 10,000 acres (4,046 ha) of potatoes, corn, alfalfa, wheat, edible beans and bluegrass for seed irrigated by eight Zimmatic center pivots drawing water from canals and groundwater sources. Three 100-horsepower (101.38 metric hp) pumps are used to supply water to the eight pivots, including one pivot located more than a mile away from the Watertronics pump station.

All of the pumps are housed at a central pumping station and equipped with the Watertronics

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# WATERTRONICS CUSTOMIZED PUMP STATION

<table>
<thead>
<tr>
<th>Projected Annual Water Savings</th>
<th>1,000 acre feet, or 325 million gallons (1.2 billion liters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected Labor Savings</td>
<td>13,000 man hours per year</td>
</tr>
<tr>
<td>Projected Annual Energy Savings</td>
<td>25 percent</td>
</tr>
</tbody>
</table>

**WATERTRONICS CUSTOMIZED PUMP STATION**

AJ Ochoa Farm, Othello, WA

**Variable Frequency Drive (VFD)**
Specifically tunes pressure characteristics to each pump and combination of pumps in the system, ensuring near perfect pressure regulation.

**Electronic Butterfly Valve (EBV)**
Patented EBV complements VFD controls by pressure regulating each pump and provides 100% backup pressure regulation in the event of a VFD fault.

Continued >
is truly ‘plug-and-play’ because it was all engineered and tested earlier at the factory.”

The eight pivots are equipped with Lindsay’s FieldNET™ Web-based irrigation management system, which will allow Ochoa complete control over not only his pivots, but also his Watertronics pump station. McCabe noted that there is considerable interest in the Ochoa’s Othello operation. Local growers are stopping by to ask questions and Avista Utilities is analyzing how much energy is being saved as a result of the new Watertronics system.

Ochoa is already seeing the water savings. “We were using about 21 acre feet of water to irrigate the land previously. Now we are using about 14.5 acre feet for that same land. It’s an amazing system.”

McCabe was amazed at how quickly the Watertronics pump station was up and running.

“The entire pump station was pre-engineered and tested at the Watertronics factory in Wisconsin,” McCabe says. “Then it was dismantled and shipped to Othello and installed in a few hours. The Variable Frequency Drives provide a very soft start and allowed AJ to start-up the system in a matter of seconds versus what would normally take days. The Ochoa pump station is truly ‘plug-and-play’ because it was all engineered and tested earlier at the factory.”

The pump sequencing also saves on system wear and tear.

VFD and EBV pressure regulation and control for maximum efficiency. The Watertronics pump control station is fed electrical power by a single, high-efficiency electrical transformer supplied by the local power company, Avista Utilities (see Avista story sidebar). Ochoa’s system is designed for a three-phase electrical hook-up although the Watertronics system is designed to work with single-phase wiring as well.

“The Watertronics control station and the VFD-equipped pumps are extremely efficient,” Ochoa explains. “If I have only one pivot circle running, the station will pump only enough water and use only enough energy to supply that one pivot. If two or more circles are running, the Watertronics system will turn on another pump automatically. I can pump 220 gallons (832 liters) to 6,600 gallons (24,984 liters) per minute off of the same system. It slows down or speeds up automatically to match the demand and that results in a huge savings of water and energy.

Lindsay’s local Zimmatic dealer, Irrigation Specialists of Othello, Wash., worked closely with Ochoa in setting up the Watertronics pump station. Irrigation Specialists’ Steve McCabe was amazed at how quickly the Watertronics pump station was up and running.

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Ochoa, who has been farming since the late 1980s, is assisted in his operation by his wife, Jodi, and their two children, Austin, age 14, and Callie, age 12. 

Contact Info:
Irrigation Specialists
1155 South Broadway
Othello, WA 99344
509-547-1761
Avista Utilities, an investor-owned energy company serving more than 335,000 electric customers in Washington and Idaho, worked with Othello, Wash., grower AJ Ochoa in helping to install his state-of-the-art agricultural water pump station. The energy company is now interested in tracking the energy savings of the Watertronics system.

“Avista Utilities wants to help its customers to be as energy efficient as possible,” says Bill Pickett, Avista operations supervisor.

Because the Othello operation has one pump station, Avista was able to install a highly-efficient, state-of-the-art electrical transformer at Ochoa’s farm to supply the electricity needed to run the eight pivots. Normally it takes up to one transformer per pivot, depending on the location of the other pivots.

“It appears the pumping station, especially the VFDs, results in significant energy savings and we want to document it. Because the Watertronics pumps at the Ochoa farm are equipped with VFDs, they have a much ‘softer’ start which means less electrical demands on our system,” Pickett says.

Jerry Wright, regional account executive at Avista, says the utility offers rebates to qualifying customers for projects that save energy. Visit www.avistautilities.com for details.

Check with your local power company to see if it offers similar rebates.

MAIN BENEFITS OF WATERTRONICS PUMP STATIONS

Customized
- Integrated pump and pivot control
- Multiple irrigation system operation
- Engineered system to save energy, water and labor
- Delivered as a factory-assembled unit for fast installation

Consistent water delivery

Lower cost of production
- Reduced energy costs
- Simple monitoring and control to save time and labor

Higher yields through more uniform water application

Immediate energy savings
- Surge-free pressure regulation
- VFD matches pump output to demand

Consistent reliability
- Performance tested prior to delivery
- Complete installation and service

Higher returns – save up to 25 percent on water and energy costs

WATERTRONICS IS ALSO AVAILABLE AS AN ECONOMICAL UPGRADE TO ANY EXISTING PIVOT, PUMP OR PUMPING STATION

ABOUT WATERTRONICS

Lindsay and Watertronics Team Up to Provide a Fully-Integrated Pump/Pivot Control System

Lindsay Corporation’s recent acquisition of Watertronics, Inc., based in Hartland, Wisc., opens up a whole new avenue of controlling water on farms. Watertronics has been in the pump business for 30 years. The company is a leader in designing, manufacturing and servicing water pump stations and controls for agriculture, golf, landscape, municipal and water conservation markets and supports pump stations worldwide.

Watertronics president Rick Reinders says Watertronics and Lindsay are now able to provide a fully integrated pump and pivot control package.

Reinders says integrating the irrigation water source (pumps) and the water distribution system (pivots) provides several benefits to growers.

Reinders adds, “The advanced controls are available as an upgrade to any existing pivot or pump system, so growers who don’t need a packaged pump system can still realize big energy, water and labor savings by using our proprietary control panels and telemetry systems.”

“Watertronics pump and control technology is ideally suited for the challenges of the agricultural market,” says Chip Carlson, Watertronics chief operating officer.

“Combined with Lindsay’s advanced FieldNET™ pivot controls, we now deliver to growers what they have been asking for — full control of the irrigation water on their property.”

Rick Reinders
Watertronics President
Getting the right amount of water on potato crops is critical for producing higher, more uniform yields. Potatoes are shallow-rooted and more sensitive to soil moisture stress than crops with deeper roots.

According to Blake Onken, Ph.D. and Certified Professional Soil Scientist, moisture stress can reduce potato yields, produce misshapen tubers, and negatively affect processing quality.

“Proper irrigation management helps optimize yields, size distribution and quality of both seed- and consumption-grade potatoes,” Onken says. “Potatoes require a soil moisture content that must be maintained at a relatively high level.”

Mike Wagner of Middleton, Idaho, raises potatoes that are used for french fries, hash browns and other foods. Wagner says proper irrigation management is critical to not only saving labor and water but also to improving yield and quality of his potato crop.

“We raise by far the best processing potatoes under our center pivots,” Wagner says. “Potatoes require constant irrigation. We irrigate our potatoes with a small amount of water every other day versus heavier irrigation for other crops.”

In addition to potatoes, Wagner grows sugar beets, corn, wheat, alfalfa and dry beans on his western Idaho farm, where it rains an average of 10-12 inches per year.

“If the potatoes become dry or stressed it shows up in the uniformity and quality of the crop, which impacts the base price of the crop and quality incentives.”

To effectively plan irrigation, Onken says growers need to account for evapotranspiration (ET), which is the total water use of a crop, including evaporation from the soil and transpiration by the plant.
Onken says, “Under limited water supplies, irrigation should be directed toward maximizing yield per acre or hectare, rather than spreading the limited water over a larger area. Very high yields can be achieved with irrigation systems where evapotranspiration losses are replenished each day or every two days.”

According to Wagner, more and more potatoes are being grown under center pivot irrigation in his area. He has converted several flood and wheel-line irrigation systems to new Zimmatic center pivots.

“The center pivots have saved labor and energy costs. We also use low pressure drop nozzles, which save water and increase our irrigation efficiency,” he adds.

Wagner applies fertilizer, pesticides and fungicides to his potatoes using Zimmatic center pivots, saving on application costs.

“Potatoes are very susceptible to blight so we chemigate with several applications of fungicides through our center pivots. It’s another way to save time and money and use our Zimmatics as efficiently as possible,” Wagner says.

Wagner has been farming for 30 years. His wife and five children, and a brother, Gary, also help with the farming operation.

Wagner’s local Zimmatic dealer is Agri-Lines Irrigation, Parma, Idaho. “I have dealt with Agri-Lines for many years. They always have parts on hand that I need and they are absolutely great to work with.”

### Contact Info:
**Agri-Lines Irrigation**
115 North 2nd Street
Parma, ID 83660
208-722-5121

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### RELATIVE POTATO YIELD FOR DIFFERING RELATIVE IRRIGATION AMOUNTS

Total tuber yield as influenced by the difference between irrigation and evapotranspiration (ET) on 45 commercial potato fields in southeastern Idaho.

<table>
<thead>
<tr>
<th>Irrigation – ET</th>
<th>Total tuber yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>centimeters</td>
</tr>
<tr>
<td>&lt; -3</td>
<td>&lt; -7.6</td>
</tr>
<tr>
<td>-3 to -1.5</td>
<td>-7.6 to -3.8</td>
</tr>
<tr>
<td>-1.5 to 0</td>
<td>-3.8 to 0</td>
</tr>
<tr>
<td>0 to 1.5</td>
<td>0 to 3.8</td>
</tr>
<tr>
<td>1.5 to 3</td>
<td>3.8 to 7.62</td>
</tr>
<tr>
<td>&gt;3</td>
<td>&gt;7.62</td>
</tr>
</tbody>
</table>

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New Zealand Growers Get Better ROI From New MAXfield Custom Corner Systems
New Zealand growers Tim Robilliard and Nick Tayler recently purchased new MAXfield Custom corner irrigation systems. And they are already reaping the benefits of water, labor and energy savings for their farming operations.

Robilliard uses his new MAXfield Custom—his first pivot system—to irrigate beans, peas and pasture on his farm located near Leeston, on the Canterbury Plain, on the South Island of New Zealand.

“The MAXfield allows us to better target irrigation for different crops and different needs,” Robilliard says. “To grow process crops such as beans and peas, it is important to make sure they mature evenly and the MAXfield lets us do that with the system’s uniform application of water. It’s ideal for our farming operation.”

Robilliard’s MAXfield system was purchased from Lindsay dealer Plains Irrigators of Ashburton. It has seven spans, plus the steerable swing arm, for a total length of 1,700 feet (518 meters). It can irrigate up to 175 acres (71 hectares).

Robilliard’s pea and bean crops are processed into frozen vegetables by a large consumer food company. He also uses his system to irrigate pasture for grazing by sheep, dairy and beef cattle.

“I definitely like the corner system because it provides uniform application of the water. The labor savings is a big advantage and we are seeing energy savings as well.”

Plains Irrigators worked with Robilliard in creating a custom irrigation program based on the unique characteristics of his fields, ensuring the uniform water application pattern for his vegetable crops and pasture.

According to Rick Provaznik, Lindsay product manager, the MAXfield Custom corner employs a unique and patented design concept to help growers like Robilliard and Tayler gain more uniformity and better water resource utilization.

“The MAXfield Custom corner uses data collection to ‘learn’ the field and then develops a custom water pulsing pattern in the corners. As the system travels around the field it will know where it is and then calculate water application rates to cycle the sprinklers on and achieve water uniformity,” Provaznik says.

The system also has the option of using Lindsay’s exclusive Corner 4x4 which allows for four wheels on the corner swing tower. With this additional set of wheels, growers are able to overcome the challenge of getting stuck in the field due to low lying or drainage areas.

Robilliard’s wife, Julie, is a partner in their New Zealand farming operation. They have two teenage daughters.
Near Winchester, also on the Canterbury Plain, Nick Tayler is another grower who benefits from the customized, uniform irrigation provided by the MAXfield Custom corner. Tayler grows potatoes, carrots, wheat, barley and rye grass seed with the help of two new MAXfield Custom corner systems, in addition to an existing Zimmatic lateral and several hose-reel guns.

“The customized uniformity of the water distribution is exceptional and has definitely helped to increase my yields compared to the hose-reel guns I was using previously,” Tayler says. “We use less water now and grow more uniform vegetable crops, which is critical because we sell our potatoes and carrots for processing and receive premiums for uniform size and grade.”

Tayler’s father, Peter, and brother, Michael, are partners in the multi-generational farming operation. He and his wife, Jane, have two boys and a girl.

In addition to the vegetable crops and grass pasture, Tayler raises sheep and beef cattle on his farm, which has been in the family for decades.

Tayler is quick to recognize his local Lindsay dealer, Grafton Irrigation of South Island, NZ, for mapping his field, installing the system and helping to make sure his MAXfield Custom corners are operating efficiently. He plans to add a third MAXfield Custom in the near future.

“The MAXfields have performed well during their first year of use and Grafton Irrigation was great to work with. They are a local company and provided all of the planning and after-sale support I needed,” Tayler says.

**Benefits of the MAXfield Custom Corner**

- Uses Lindsay’s SmartChip Technology to map fields for precise irrigation
- Proven reliability and durability
- Brings more acres under irrigation
- Increases yields through uniform water application
- Saves time, labor, water and energy for increased ROI
Survey Shows Value of Irrigated Cropland

A new survey by the University of Nebraska-Lincoln (UNL) shows a center pivot can add $958 to an acre of cropland in Nebraska. According to preliminary results from UNL’s 2009 Nebraska Farm Real Estate Market Survey, the average price of center pivot irrigated cropland was $3,156. The average price of dryland cropland with irrigation potential was $2,198 in Nebraska, a difference of $958, or 43.5 percent. The value of the pivot was not included in the per acre value.

By class of land, the survey showed irrigated land classes for the state as a whole recorded slight gains while dryland cropland and the grazing land values declined slightly for the year ending Feb. 1, 2009.

For more information, visit http://www.agecon.unl.edu.

Census of Ag by the Numbers

$297 billion
Amount of U.S. ag products sold in 2007

39%
Increase in production expenses from 2002

93%
Increase in gasoline and fuel expenses since 2002

26%
Ag products sold that came from grains and oil seeds

21%
Ag products sold that came from cattle and calves

$3.7 billion
Value of ag products sold from Fresno County, Calif., the nation’s top producing ag county

Sources: 2007 Census of Agriculture and Farm Journal
Corn and soybean growers see bright future for biofuels.
Corn and soybean grower leaders are optimistic about the long-term future of the biofuels industry, including ethanol and biodiesel, despite some recent setbacks for the industry.

“The strength of the corn ethanol industry will help spur research and investment into the next generation of biofuels, some of which will use corn-based feedstocks,” says Bob Dickey, president of the National Corn Growers Association (NCGA). “Corn ethanol is a fuel that is here to use today. We see corn ethanol as a viable, important fuel to help our country move beyond fossil fuels.”

Dickey, a corn and soybean farmer from Laurel, Neb., says the ethanol industry created or supported nearly a half-million jobs in 2008 and added nearly $65 billion to our nation’s economy. Dickey says it’s vitally important to move beyond the standard E10 blend (10 percent ethanol blended with 90 percent gasoline), and NCGA is urging the U.S. Environmental Protection Agency to allow higher blends of ethanol to be used in gasoline.

“We may have hit some bumps in the road, but biodiesel is here to stay because it is environmentally-friendly, renewable, creates jobs, and helps farmers and rural America,” Korth says. “Biodiesel is a homegrown fuel that we can use year after year.”

Korth says most of the U.S. biodiesel plants are owned by farmers and supporting, producing and using biodiesel is a great way for farmers and rural Americans to help themselves, while at the same time reducing the country’s dependence on foreign oil.

“Biodiesel is environmentally-friendly and people get excited when it comes to the environment, so that will help to drive future market growth for biodiesel. Air quality standards in U.S. cities will also help increase future demand for biodiesel,” Korth says.

Dickey says the corn growers are optimistic about the long-term success of corn ethanol for two reasons. “First, many in our country seek to move beyond reliance on foreign oil and focus on energy security and independence. Domestically produced corn ethanol helps move us in that direction. Second, corn ethanol is renewable and better for the environment than petroleum-based fuels, with greenhouse gas emissions that are significantly less than gasoline.”

The benefits of biofuels

- Safer in comparison to the large amounts of pollution that fossil fuels create
- Biomass can be generated in a matter of days, unlike fossil fuels that require millions of years to generate
- Renewable energy source
- Cost-effective for consumers
- Dependence on vanishing fossil fuels is lessened

1http://www.gogreenstreet.com/biofuel
Optimizing crop yields requires uniform water and nutrient distribution in the field and biofuel crops are no exception. Applied water and fertilizer need to be in the right place at the right time while keeping wasted inputs to a minimum. Pivot irrigation systems provide growers the control they need to apply water and fertilizer that optimize yields while reducing waste.

Modern pivot controls are state-of-the-art and provide precise irrigation management capability and record keeping. This allows irrigation scheduling to meet crop water needs at the right time, as well as tracking of water, fertilizer, and chemical use. Fertilizers and chemicals applied through a pivot system are applied with the same high efficiency as the irrigation water. "Spoon-feeding" of fertilizers provides timely application and better plant utilization of nutrients and reduces loss of fertilizers/chemicals to leaching or runoff. This fact was demonstrated by researchers from the University of Nebraska in center pivot irrigation trials with corn. When pivot-applied water and nitrate fertilizer applications were reduced by 66% and 37% respectively, yield was still 94% of furrow irrigated corn.* Significant input savings could still be obtained with more modest cutbacks in water and fertilizer while maintaining optimum corn yields.

Pivot irrigation allows growers flexibility in time of planting and high seed survival rates. Water and fertilizer can be precisely placed within the whole root zone and in a way that prevents deep percolation or runoff. With low investment costs per acre, pivots provide insurance against yield loss from drought or inconsistent rainfall and increase yield per acre. Increased yield per acre effectively reduces the land required for biomass production. This should also reduce transportation costs for biomass from farm to biorefinery as growers close to production facilities can better satisfy raw materials requirements.

Getting More Value Out of Less Water

Converting to mechanical move irrigation from gravity flow irrigation can help you produce higher yields and save fuel, labor and water. Studies show mechanical move irrigation saves an average of 35 percent of water and as much as 75 percent on labor over gravity flow irrigation.

Pivots provide a uniform and precise application of water versus flood which over-applies at the upper end of the field and under-applies at the lower end of the field.

For more information on converting from gravity flow to mechanical move irrigation, including a downloadable conversion brochure, visit www.zimmatic.com.

Upcoming Shows

**Farm Progress Show**
September 1-3, 2009
Decatur, Illinois
www.farmprogressshow.com

**Sunbelt Ag Expo**
October 20-22, 2009
Moultrie, Georgia
www.sunbeltexpo.com

**Potato Expo**
January 4-6, 2010
Orlando, Florida
www.potato-expo.com

**Husker Harvest Days**
September 15-17, 2009
Grand Island, Nebraska
www.huskerharvestdays.com

**Irrigation Show 2009**
December 2-4, 2009
San Antonio, Texas
www.irrigation.org

Take a look at these useful, up-to-date Websites

**Farmers for the Future** – An online network for young and beginning farmers.
www.farmersforthefuture.ning.com

**Capital Press** – Farm and ranch news covering California, Idaho, Oregon, Washington and other western states.
www.capitalpress.com

**AgWired** – News from the world of agribusiness.
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