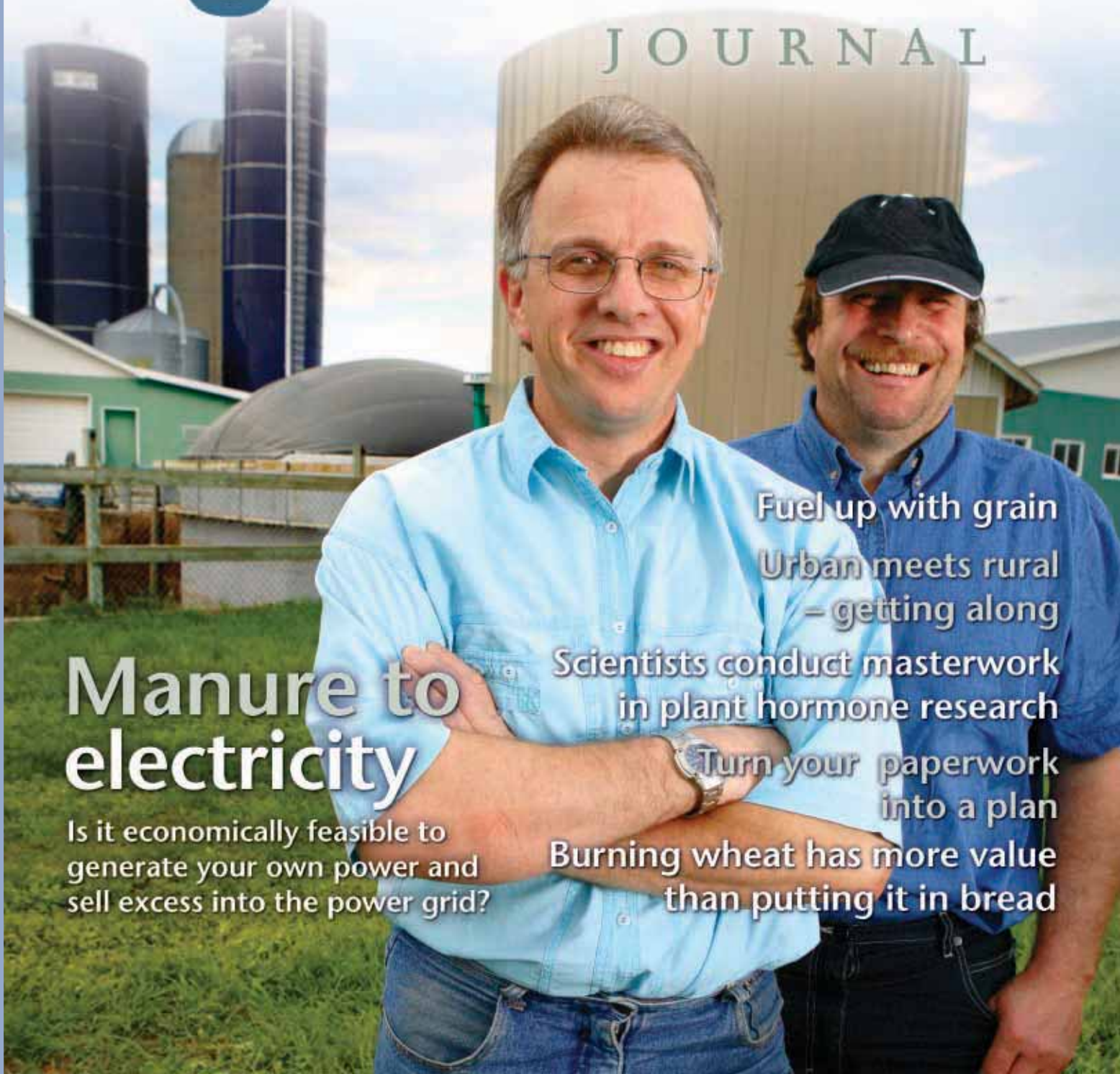


July/August 2006

AgriSuccess

JOURNAL



Manure to electricity

Is it economically feasible to generate your own power and sell excess into the power grid?

Fuel up with grain

Urban meets rural
- getting along

Scientists conduct masterwork
in plant hormone research

Turn your paperwork
into a plan

Burning wheat has more value
than putting it in bread

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On the cover:

Paul (left) and Fritz Klaesi on their dairy farm near Cobden, Ont.

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Letter from the editors



FROM KEVIN HURSH AND ALLISON FINNAMORE

The world seems to be on the cusp of a new era. With traditional energy sources becoming more expensive, agriculture is uniquely positioned to fill the dual role of food provider and energy provider.

As we brainstormed ideas for this edition, the theme was going to be environment. Along the way, alternate energy sources became the focus.

Of course, anything that reduces the consumption of fossil fuels is good for the environment, so we didn't entirely lose the environmental theme.

In many ways, the topic of alternate fuels is history repeating itself. Back when horses were the pulling power on farms as well as the major mode of transportation, hay and grain were the fuel sources.

When Henry Ford invented the automobile, he initially envisioned ethanol as the fuel rather than gasoline.

In the Great Depression of the Dirty '30s, a few prairie settlers who couldn't afford coal burned grain to keep their meagre homes warm.

Technology has improved grain-burning stoves as well as ethanol extraction rates. Technology is also making it feasible to generate electricity from livestock manure.

High energy costs are squeezing farm margins across the country. The upside is that agriculture is returning to its roots as an energy supplier.

We hope you enjoy the stories compiled in this edition. Your ideas and comments are always welcome. You can e-mail info@AgriSuccess.ca or call 1-888-332-3301.

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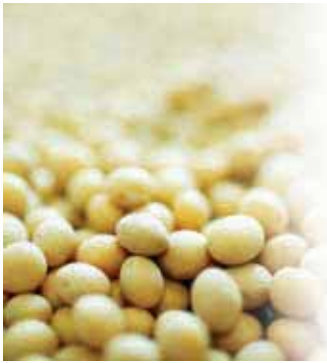
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The editors and journalists who contribute to AgriSuccess Journal attempt to provide accurate and useful information and analysis. However, the editors and FCC/AgriSuccess cannot and do not guarantee the accuracy of the information contained in this journal and the editors and FCC/AgriSuccess assume no responsibility for any actions or decisions taken by any reader of this journal based on the information provided.

Reducing risk in commodity markets



BY LORNE McCLINTON

Global commodity markets have been hot and with the stocks and bond market performance sluggish, many investors think commodities are the place to be. Small wonder with the highs that gold and oil have hit. Even agricultural commodities like soybeans and sugar substantially outperformed the S&P 500 in 2005.

Commodities have a well-deserved reputation for being high-risk investments. Many investors have come to the conclusion that owning a basket of commodities, through an exchange traded commodity index fund (ETF), is a less risky way to invest in the commodity market.

The newest ETF on the market is the Deutsche Bank Commodity Index Tracking Fund (symbol DBC). This mutual fund tracks the performance of light sweet crude oil, heating oil, gold, aluminum, corn and wheat. Since its launch in early February 2006, the fund has taken investors on a wild roller coaster ride but managed to post an impressive 15 per cent gain in its first two months.

Of course, past performance is no guarantee of future returns.

Standard price for small electricity providers

BY KEVIN HURSH

Ontario has developed a Standard Offer Program whereby the government will set a fixed price for the purchase of electricity from small renewable energy projects.

Under the plan, the Ontario Power Authority will purchase electricity produced by wind, biomass or small hydroelectric at a base price of 11 cents per kilowatt hour. The fixed price for solar will be 42 cents per kilowatt hour.

Ontario says that until now it was too costly for small renewable power projects by farmers, rural landowners, community groups, First Nations, businesses or municipalities to sell their energy to the grid.

Over the next 10 years, the program is expected to help add up to 1,000 megawatts of renewable energy – enough to supply 250,000 homes.

Water project funding

BY ALLISON FINNAMORE

Producers in British Columbia, Alberta, Saskatchewan, Manitoba, Quebec, Nova Scotia and Prince Edward Island can get financial help with some water projects on their farms.

The National Water Supply Expansion Program is a \$60-million plan under the Agricultural Policy Framework aimed at reducing water shortage risks and meeting growing water demands by securing reliable and healthy water sources. Eligible projects include on-farm infrastructure like dugouts and new wells, larger projects like regional water pipelines, and research such as groundwater studies and water supply planning. In most cases, the cost of the project is split between the producer and the federal and provincial governments.

Go to www.agr.gc.ca/h2o



Fuel up with grain



BY KEVIN HURSH

Renewable fuels are no longer some pie in the sky futuristic phenomena. The future has arrived.

Producers in various locations across the country will see new local demand for their grain to supply recently completed or expanded ethanol plants.

Wheat is flowing to new plants at Lloydminster and Weyburn, Sask. A new plant is being built near a much smaller existing facility at Minnedosa, Man., and will require wheat as feedstock. At Sarnia, Ont., a new plant will be using corn to produce ethanol.

China has just opened the world's largest ethanol facility – 800 million litres per year.

Many other facilities are proposed. There's no doubt Canadian production of biofuels will increase dramatically in the years ahead. The rate of growth will

depend upon the policies implemented and the availability of investment capital.

A recent report by the Canadian Renewable Fuels Association points out that Brazil and the United States are far more advanced than Canada in ethanol production. In biodiesel, the leader is Europe, with significant activity in the U.S.

World grain and oilseed markets are already feeling the effect of the new demand.

Lionel LaBelle of the Saskatchewan Ethanol Development Council says 12 per cent of U.S. corn is going into ethanol production. This year, as new American ethanol plants are commissioned, more corn will go into ethanol than exports. LaBelle says that by 2009-2010, America will no longer be in the corn export business.

Meanwhile, notes LaBelle, China has just opened the world's largest ethanol facility – 800 million litres per year. South Africa has set an aggressive ethanol target and Sweden wants to be entirely weaned from fossil fuels by 2020.

Over the past year, Europe has emerged as a major market for Canadian canola oil for the production of biodiesel. While Europe won't consume Canadian canola due to GMO concerns, they are buying all the canola oil we can ship them. Sales have been limited only by our crushing capacity.

Barb Isman of the Canola Council of Canada says crushing plants in countries like Dubai have switched from soybeans to Canadian canola to take advantage of the European demand. She notes that canola is a preferred oilseed for biodiesel due to superior cold flow properties.

Without this unexpectedly large new market for canola oil, the huge Canadian canola crop produced in 2005 would have weighed even more heavily on the marketplace. The carryover at the end of the crop year will still be large, but it won't be the mountain initially predicted.

Grain and oilseed markets have a history of being oversupplied. The result has been prices that are often disappointing.

The world hunger for cleaner burning renewable fuels is a burgeoning demand that promises a brighter future.



Manure to electricity

Canadian farms embrace biogas

BY LORNE McCLINTON

Electricity is a huge expense for most Canadian farms but not at Fritz and Paul Klaesi's dairy near Cobden, Ont. The Klaesi brothers' 140-cow dairy is one of the handful of Canadian farms that have an operational biogas electrical generation system that uses methane from manure pits to produce electricity. Their system, now operating for nearly three years, generates

400 cubic metres of methane gas and produces 750 kilowatts of electrical power daily, more than enough power to supply their farm's needs and heat the brothers' two houses.

"If everything stays the same, it will pay for itself in 10 years."

"The system cost \$280,000 to install with lots of the labour and design being done by us," says Fritz Klaesi. "We built it entirely without government subsidies and if everything stays the same, it will pay for itself in 10 years. It was an excellent system and even though we have had problems with the engine and control systems, we would do it again. Biogas is the future."

The Klaesi brothers, like most of the first Canadian farms generating electricity from manure, use a system imported from Europe where biogas generation is much more common. A handful of Canadian companies, like RENTEC Renewable Energy Technologies in Peterborough, Ont., Clear Green Technology in Saskatoon, Sask., and Bio Terre in St. Andrews, Man., now provide designed-in-Canada solutions.

The heart of all biogas generation systems is the biodigester. A biodigester looks like a standard liquid manure storage tank but has a balloon-like rubber membrane fastened to the top. Manure, crop residue or other biodegradable organic waste is fed into the digester. Methane gas, produced by the anaerobic

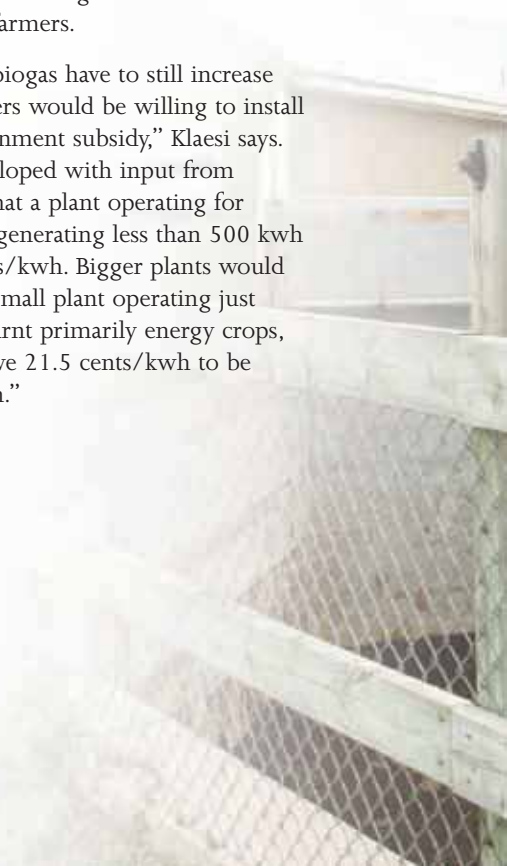
decomposition and fermentation process, is trapped in the balloon. This then powers an internal combustion engine that drives an electrical generator.

Is a biogas system economically viable on your farm?

That very much depends on your farm and where it is located in Canada, says Nils Semmler with RENTEC. Energy is provincially regulated and the rules and regulations vary dramatically across Canada.

Alberta is currently the Canadian leader in biogas generation but strict new nutrient management regulations and high energy costs are sparking interest across the nation. Ontario has just implemented an 11 cent per kilowatt hour (kwh) pricing regimen (14 cent for peak usage) for green electricity which makes biogas a more attractive option for Ontario farmers.

"Electrical rates for biogas have to still increase before most producers would be willing to install one without a government subsidy," Klaesi says. "Our numbers, developed with input from OMAFRA, showed that a plant operating for 8,000 hours a year, generating less than 500 kwh would need 17 cents/kwh. Bigger plants would need 13.3 cents. A small plant operating just 3,000 hours, that burnt primarily energy crops, would need to receive 21.5 cents/kwh to be profitable on its own."



Ontario and Quebec are the only provinces that offer grants to build biogas systems. Quebec will pay up to 70 per cent of the cost of installing a manure handling facility (maximum of \$200,000). Ontario producers can receive a grant of up to \$60,000 for on-farm manure treatment and storage facilities.

Philip and Luanne Lynn are in the final construction phase on a plant that will produce both a megawatt of electricity and four million litres of ethanol at their 5,800-head feedlot near Lucan, Ont. They initially embraced the system to meet Ontario's stringent nutrient management requirements.

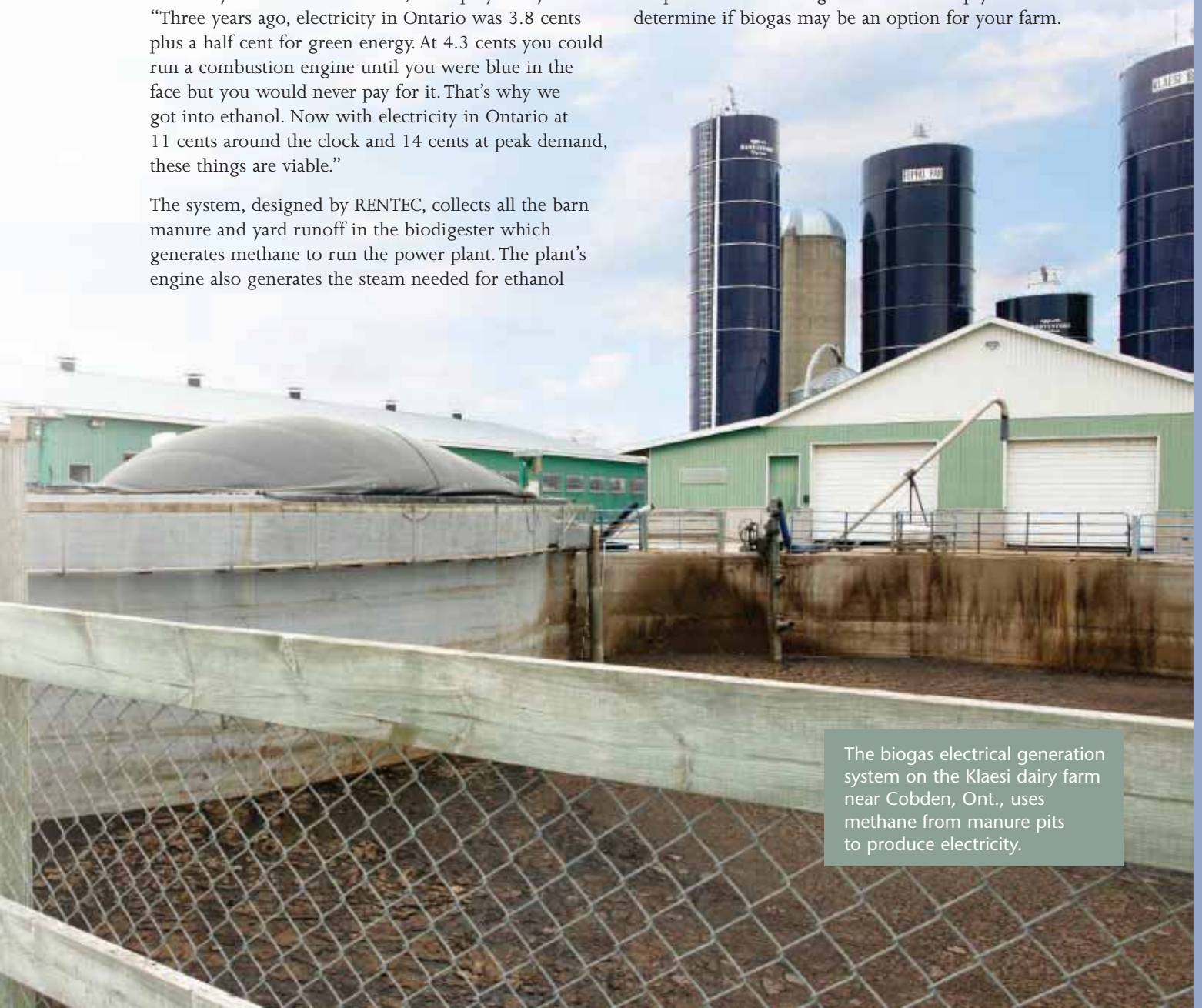
"Ethanol was our initial priority because electricity rates were very low when we started," Philip Lynn says. "Three years ago, electricity in Ontario was 3.8 cents plus a half cent for green energy. At 4.3 cents you could run a combustion engine until you were blue in the face but you would never pay for it. That's why we got into ethanol. Now with electricity in Ontario at 11 cents around the clock and 14 cents at peak demand, these things are viable."

The system, designed by RENTEC, collects all the barn manure and yard runoff in the biodigester which generates methane to run the power plant. The plant's engine also generates the steam needed for ethanol

production at no additional cost. The distillers' grain produced by the ethanol production is fed back to the cattle, who process it back into manure to start the cycle again. Since the plant uses no fossil fuels, it will be the greenest ethanol plant in North America.

"A biogas system may make perfect sense for one 100-cow or 400-hog farm and no sense at all on another," Semmler says. "The difference can be night and day depending on the existing farm setup. For example, if your feedstock is dependent on antibiotics, they will kill the microbes that perform the anaerobic digestion."

A lot of background material and technical documents are posted at www.biogas.ca that can help you determine if biogas may be an option for your farm.



The biogas electrical generation system on the Klaesi dairy farm near Cobden, Ont., uses methane from manure pits to produce electricity.

New loan supports young farmers

Access to financing that makes intergenerational farm transfers easier is a major issue in rural Canada. Farm Credit Canada's new Accelerator Loan is designed to help young and future farmers enter the industry.

The Accelerator Loan, a \$50 million commitment in new lending for young farmers, also helps existing farmers expand their operations. The loan addresses the issues of down payment, cash flow, equity building and asset transfer by offering a zero down payment and interest-only payments on a portion of the loan, and a competitive rate.

Young farmers using the Accelerator Loan receive over \$1,200 worth of AgExpert Analyst farm financial management software and AgriSuccess Training, at no charge. For established farmers selling their property and using this loan, FCC offers AgriSuccess training on succession and estate planning.

"There will soon be a massive transfer of assets, about \$47 billion, from older farmers to younger farmers," explains John Ryan, FCC President and CEO. "Our new Accelerator Loan allows for that transfer to take place."

With no down payment required, customers do not require another loan for a down payment. And, with flexible payment options, they have the cash flow to meet other spending priorities. Customers will require a seller who does not need full payment up front, since FCC-guaranteed payments will be distributed over time.

"We listen to our customers and industry partners and understand their needs," adds Ryan. "This loan is part of our commitment to designing products that help our customers succeed."



Urban meets rural — growing together



BY ALLISON FINNAMORE

The challenges of agriculture in 2006 are as diverse as the products you produce. Yet there's at least one issue on the minds of many: neighbours.

Cities are getting larger and spilling into what was once farmland. As cities stretch their reach, they're touching farms. A producer who may be operating

the farm started by ancestors may now see a subdivision development next to a field or the livestock barn.

Increasingly, producers are looking for ways to bridge the potential divide.

The ensuing relationship can be tenuous. Increasingly, producers are looking for ways to bridge the potential divide, strengthen the rapport and develop a community

connection. The ways you're doing this are as varied as the crop choices across the country.

Jean-Robert Bourgeois, a broiler chicken producer near Moncton, N.B., has witnessed urban growth over the last few decades as the city expanded. But years ago, he foresaw the potential growth and took preventative steps. Every time land near his farm went up for sale, he did his best to make the buy. Now, he owns 200 acres. Building the buffer helps filter noise and odour. As a further step (and a paradox of modern farming), chicken manure is sent to a commercial composter and Bourgeois buys it back from local garden centres, returning it to his property to nurture the flower beds around his house.

Clay Taylor's situation is different. He's a partner in Greenwood Mushroom Farm in Whitby, Ont. In the early 1990s, Taylor and his partners took over an old fabrication plant and turned it into a mushroom farm, moving the agricultural operation into an already established area. Outside, they set up composting facilities to supply the mushroom operation.

The smell of the compost didn't impress neighbours. Since 1995 when the first legal action was launched against the farm, Taylor says the company has spent

over \$1 million on legal bills. "It's just a cost of doing business now," he says.

Taylor met community relations head-on and installed three ozone injectors, which are commonly used to decrease the odour from hog barns, on top of the compost bunkers. The farm is the first mushroom operation in Canada to use the technology. Air from the compost bunkers is injected with odour-depleting ozone before dispersal into the environment.

Dealing with sour neighbourhood relationships isn't easy, but resources are available. The Canadian Farm Business Management Council offers "Farming with Neighbours," a book on how to avoid conflicts and tips on solving them if they do come up. Regional farm organizations can also help.

The best approach, however, may be education. Don't wait for conflict to find you. Invite your neighbours to your operation and tell them about your work and why you love it — set the stage for a good relationship. If issues escalate and media becomes interested, invite journalists to your farm so you can deliver the same points you shared with your neighbours.

In a way, the same care applied to crops and livestock is needed with community relationships. Only this time, you're growing respect for agriculture.



Clay Taylor of Greenwood Mushroom Farms in Whitby, Ont., has successfully managed urban-rural relationships.

Scientists conduct masterwork in plant hormone research



BY OWEN ROBERTS

All living organisms, from people to plants, rely on hormones for certain signals, such as growth, or to regulate biological functions. Hormones play a big role on the farm, not only in animal agriculture, where a sire's coming of age is certainly a hormone-related event, but also for crop production. Abscisic acid (ABA) is one of the major plant hormones influencing the timing of seed germination, as well as a plant's ability to tolerate drought. Imagine if that hormone could be altered, if drought tolerance could be tweaked methodically, or cold tolerance improved. Or if more uniform timing, advanced timing or delayed timing was possible. Just picture the production advantages that would be inherent in seed that germinated uniformly, consistently, and on a schedule other than its own.

"Agricultural productivity is going to receive a boost from this scientific breakthrough."

Now, it's more than a dream for Prof. Robert Hill of the University of Manitoba. He and a team that includes the National Research Council Plant Biotechnology Institute in Saskatoon, made an unprecedented discovery late last year about plant hormones – specifically, about something called plant hormone receptors.

These receptors are critical to the action of the hormones. If you don't have the specific receptors, or enough of them, the hormones won't kick in. That can skew everything from germination to drought tolerance.

Scientists know these receptors exist, and they know their role. Specifically, they knew ABA helped plants survive environmental stresses such as drought, salt and cold, but they had been unable to identify the receptor. And that was a critical missing link.

The Hill researchers have become the first to characterize the receptor for ABA, and describe how it behaves. It turns out a protein called FCA acts as a receptor for ABA. They know when ABA is present, the transition to flowering is interfered with and delayed. So, if they can build the requisite amount of ABA into seed genetics, they could control flowering.

"This discovery has many biological implications, including the prospect of greater crop yields," Hill says. "Once you have the first clue as to how the hormone is recognized by the plant, it opens the door to understanding the mechanism of hormone action, which can then be applied to improving a plant's response to environmental stress."

The finding is being heralded as a major breakthrough. A scientific paper written by the Hill team was published in *Nature*, one of the global science community's flagship publications, which accepts only two or three full articles per issue from scientists worldwide. The research sponsors, Genome Canada, lined up with congratulations.

"Agricultural productivity is going to receive a boost from this scientific breakthrough," said Dr. Martin Godbout, President and CEO of Genome Canada. He called it a "tour de force led by Canadian scientists."

Hill figures it will take about a decade for the receptor discovery to make its way into the field, and start influencing the likes of yield and germination (he thinks the first commercial crop will be canola).

Realistically, a decade is how long it takes to breed a new trait into a variety, and get rid of all the unwanted elements that can accompany traditional breeding methods. Hill is not resting on his laurels. He says his lab is close to identifying a second receptor, further unravelling a mystery that has eluded science for more than 40 years.

Turn your paperwork into a plan



BY HUGH MAYNARD

Paperwork, paperwork, paperwork...if only those piles were actually good for something other than just keeping the makers of filing cabinets in business. And never has this been more so in this era of increasing environmental regulation, as it seems every new rule translates into yet another form to fill out and another certificate to file.

A goal without objectives is not worth the paper it's written on.

Well, the good news is that you can do something useful with all those columns of data and turn regulatory paperwork for the agri-environment into planning information that you can benefit from in many ways. And you might as well (the bad news), because paper generated by the ever-increasing capabilities of computers is not simply going to disappear into the shredder.

Although it may seem hard to believe, environmental paperwork actually contains a lot of useful information about your farm and its environment: soil sample results, water tests, distances of separation from neighbours, quantities of organic matter and so on.

It may have been collected to do the calculations and assessments required to obtain certificates and authorizations. But having collected this information (such as fertilizer usage and rates), why not use it for agri-environmental planning as well? The key to this is to have a plan in the first place, which in turn requires having goals and objectives.

Most people confuse the two (“They’re both the same, aren’t they?”) but there’s an important distinction to understand: goals are what you intend to do and objectives are how you intend to reach the goal. So, it’s one thing to say, “I want an environmentally friendly farm” (the goal), but how are you going to accomplish that (the objectives)? A goal without objectives is not worth the paper it’s written on.

So, let’s say an environmental goal for your farm is to minimize soil erosion. To achieve this goal, you need to set some objectives about how this will be accomplished. A typical list might be: increasing soil permeability, controlling surface run-off and maximizing soil coverage. Each one of these objectives then requires a series of actions, often described as best practices: reduce soil compaction to improve permeability, establish some grassed runways at low points to slow water flows, and create a crop rotation that includes perennials to increase year-round plant cover. Voilà – just like manure transformed into compost – paperwork turned into a plan!

There’s support to carry out agri-environmental planning through the federal-provincial National Environmental Farm Planning Initiative (www.agr.gc.ca/env/efp-pfa, click on the link for your province) and many farm organizations offer courses and workshops in environmental farm planning as well. It may still be difficult to turn a sow’s ear into a silk purse, but with a little planning, paperwork can be transformed into something practical for the agri-environment.



Burning wheat

has more value than putting it in bread

BY RAE GROENEVELD

Agriculture is at a crossroads. Rising energy prices have increased farm input costs dramatically, further squeezing any margin there was for producing grains and oilseeds. While producers struggle to find ways to make a profit, others believe this trend to higher energy prices is what is needed to put more value into crops.

“If you take a look at what oil prices used to be versus wheat, it used to be a bushel for a barrel back in the '60s. If you look now, it's less than \$4 a bushel for wheat in Chicago and more than \$70 a barrel for oil,” analyzes Ken Rosaasen, an agricultural economist at the University of Saskatchewan.


It's that change in value that is now making wheat more valuable as an energy source, to burn for heat, rather than to use for human food consumption. The big benefit of

burning grain for heat is there is little cost to the producer to get the product into a form where it can be used as a bioenergy source.

“A few years ago when oil was at \$15 a barrel, the food market was the premium market for wheat. But now with prices changing so dramatically, the rise in oil and the long-term decline in wheat, all of a sudden it has a different use. Wheat has a higher value again.”

Citing some preliminary research work in the United States, Rosaasen says the heat value of wheat makes it worth over \$5 a bushel when replacing oil as the prime heating fuel.

While it may raise the value of grain, using grain for heat is also a good way to reduce heating costs and Rosaasen believes that is an opportunity for many rural communities.



Whenever gas rates increase, Franck Groeneweg of Edgeley, Sask., gets more calls for his grain burning stoves (seen here).

“You could take a hospital, for example, or a local skating rink, those kinds of things would be able to use a grain-burning stove or furnace as their major energy source if natural gas and other energy prices stay so high.”

The recent volatility and upward trend to energy prices compared to the relative stability of low wheat prices are making many people look at grain-burning stoves as a long-term option for low cost heat.

“Every time there was talk of a natural gas rate increase, we got a lot more phone calls,” says Franck Groeneweg, owner of Green Atlantic Grain Burning Stoves in Edgeley, Sask.

The concern over energy prices helped the company sell more than 80 units last fall. The average cost for a grain-burning fireplace is around \$3,200. The company also sells grain-burning furnaces for complete home heating.

“With a bushel of wheat per day, we can heat an average 1,500 square foot house, which means we’re only looking at a couple of dollars per day at today’s feed grain prices.”

It’s the heat value of wheat that makes it such a good energy option. One bushel has been calculated to produce the same amount of heat as 20.8 litres of propane,

13.6 litres of fuel oil, 0.148 kilowatt hours of electricity and 0.159 cubic metres of natural gas.

At last fall’s high energy prices, you could have paid \$3 per bushel for wheat and it still would have cost half the amount to heat your home as it would with natural gas.

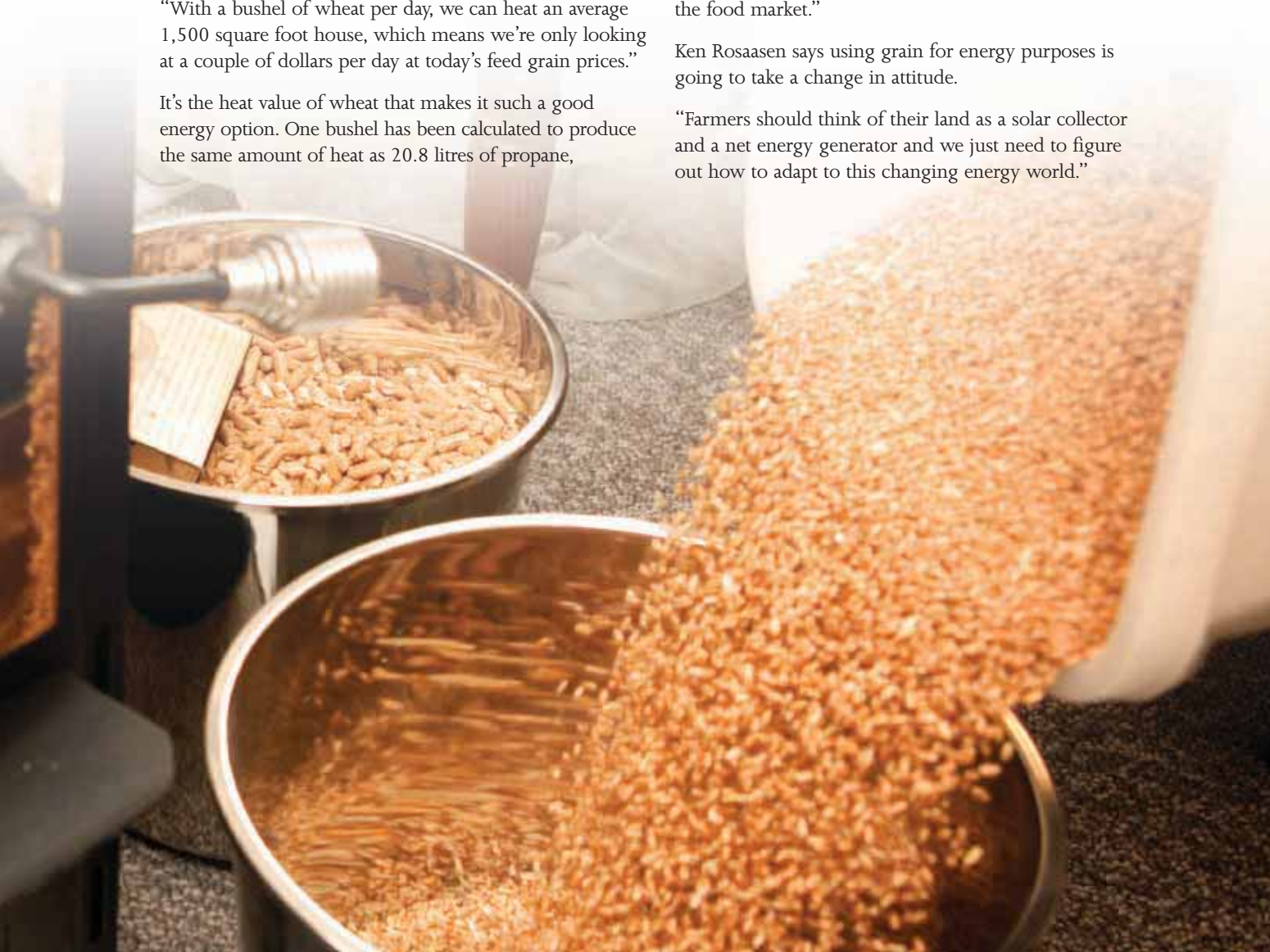
“We are definitely serving more of a rural population because the grain can be found on the farm,” Groeneweg notes. “We are trying to sell more into the city, but at trade shows the main question we get is, ‘Where am I going to buy grain from?’”

Being a producer, that frustrates Groeneweg because he knows how easy it would be for urban customers to create a supply arrangement with a grower.

“The big hang-up right now is some people are looking at grain as a food product, and what if we are running out of food? That’s a legitimate concern but there is a lot of feed grain out there right now that cannot be used for the food market.”

Ken Rosaasen says using grain for energy purposes is going to take a change in attitude.

“Farmers should think of their land as a solar collector and a net energy generator and we just need to figure out how to adapt to this changing energy world.”





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