



AG INNOVATION NEWS

The newspaper of the Agricultural Utilization Research Institute

JULY 2001
VOL. 10, NO. 3

INSIDE:



Organic snacks

PAGE 3



Life & times of an entrepreneur III

PAGE 12



Wheat litter

PAGE 16

SPECIAL FOCUS STARTS ON PAGE 4:

FARMING FOR ENERGY

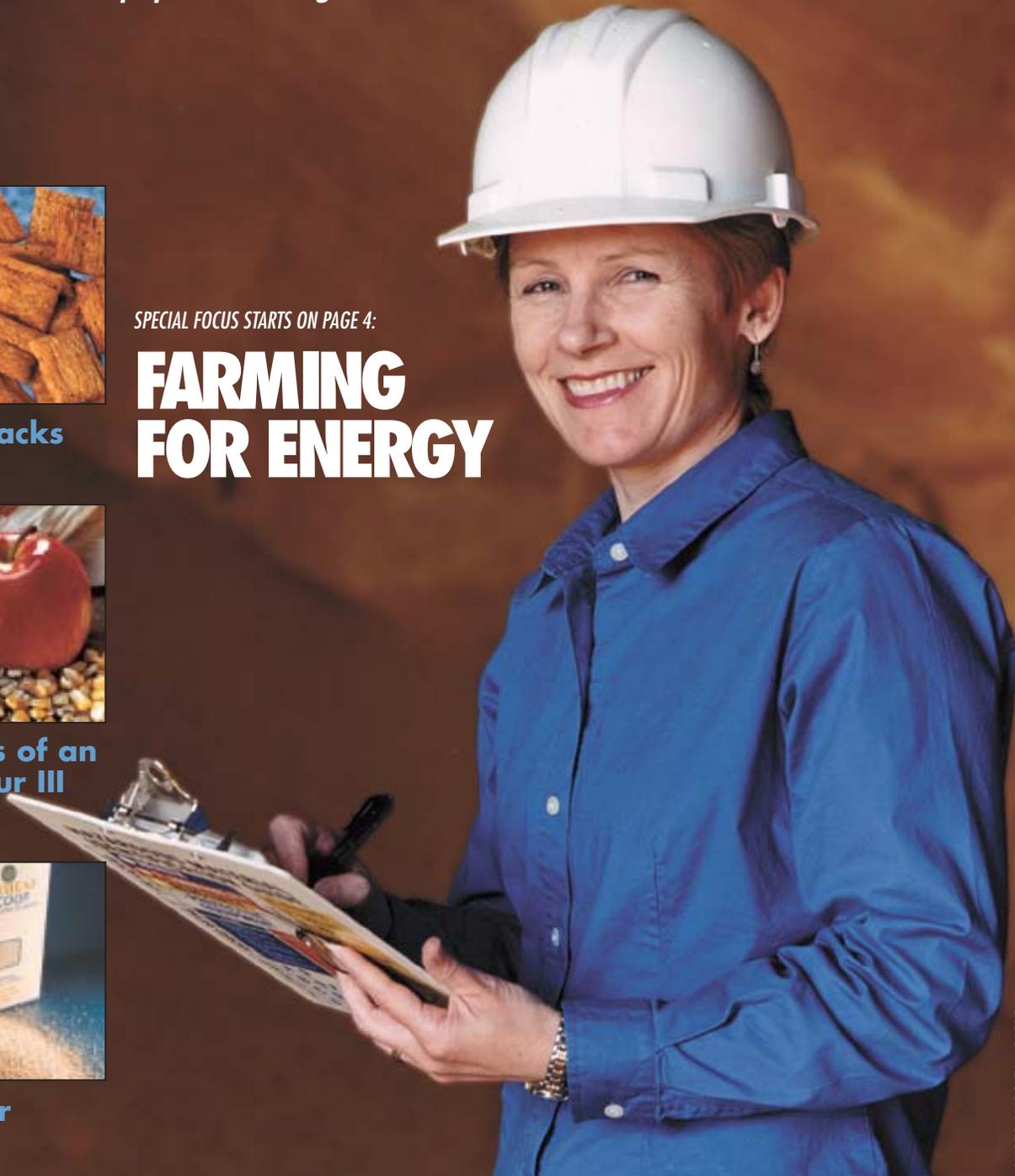


PHOTO BY ROLF HAGBERG

Agriculture could help ease the energy crunch

BY EDGAR OLSON



Not since the mid 1970s has energy been such a hot topic. While we have not had a recurrence of long lines at service stations, in the past few months we have seen the price of gasoline approach or even exceed \$2 a gallon. We've also witnessed California residents enduring rolling blackouts. These scenarios renew awareness of our reliance on energy.

Americans consume huge quantities of energy. From dozens of electrical appliances in the home and office to two or more vehicles in the driveway, we are a power-hungry society. And as our nation's population and industries continue to grow, so does the energy demand.



Minnesota farmers produce some options to ease the energy crunch right in their own fields. From corn-based ethanol to soy-powered biodiesel to methane power, there are ag-based alternatives that can help supply renewable sources of energy.

In this issue of Ag Innovation News, we examine some of the ways agriculture is trying to take advantage of current circumstances. The demand for power may be exposing some opportunities for alternative energy sources like biofuels, which could fill a portion of our energy needs.

AURI is working hard with and on behalf of Minnesota producers to help equip them to react to this and other emerging opportunities. ■



AURI news

Back to meat school

Marshall, Minn. — More than 30 Minnesota meat processors, seeking to be a cut above the competition, attended an AURI-sponsored meat processing short course in April. Open to the state's 500 licensed meat processors, the course was held in AURI's meat lab.

"We wanted to get some of the processors together to teach the principles of meat processing because they're trying to improve their products and increase sales," says Ted Gillett, AURI animal product scientist. "We also wanted to connect them with suppliers and others who can be resources for them."

The workshop included techniques for product development, nutritional labeling, waste product disposal and sausage manufacturing. Hands-on sessions in the meat lab trained processors on equipment use and product development.

"We want Minnesota's processors to be better able to compete against out-of-state competition," Gillett says.

Staff changes at meat lab

An AURI employee has hung up his carving knives for the last time.

Ted Gillett, meat technologist at AURI's meat lab in Marshall, retired June 1. Gillett joined the staff in 1997 and helped develop AURI's meat laboratory at the Southwest State University campus. He worked with numerous clients on product development and was instrumental in several Minnesota meat industry studies.

"We are grateful for the years of service Ted has offered to AURI and our clients," says Edgar Olson, AURI executive director. "He brought many years of practical and industry experience that we will miss. But we're confident that we've found a very talented person to fill that void."

Hoffman native Brian Reuter has been hired to fill the meat technologist position vacated by Gillett's retirement. Reuter holds a bachelor's degree in animal and range sciences from South Dakota State University in Brookings. Reuter will complete his master's degree, with a meat science emphasis, in July.



GILLETT.

PHOTO BY ROSE PATZER



Sausage and frankfurter making and other meat processing skills were taught at a short course in AURI's Marshall meat lab this spring.

AURI hosts rural leadership group

In late February, agricultural leaders participating in the Minnesota Agriculture and Rural Leadership program toured AURI's meat lab and fats and oils lab in Marshall. The experience enabled them to learn first-hand about AURI's services and projects.

The MARL program, based at Southwest State University, facilitates leadership development among people involved in agriculture. The two-year program involves intensive training and travel experience to help men and women realize their leadership potential and develop more effective ag organizations.

Among the 30 participants in this year's inaugural class is AURI Financial Officer Teresa Spaeth.

AURI out and about

Value-added agriculture will be on display at Farmfest 2001 and the Minnesota State Fair. AURI will be participating in both events, showcasing new products and uses for the state's agricultural products. At Farmfest, August 7-9 near Redwood Falls, Minn., AURI will be located in lot 610. At the State Fair, from August 23 to September 3, AURI will be at Agri-Land on the former Machinery Hill. AURI's displays will include product samples, interactive activities and educational opportunities. ■

A nonprofit corporation created to strengthen rural Minnesota's economy, AURI helps businesses respond to market opportunities with new and value-added uses for agricultural goods. The Institute builds working partnerships with business innovators, agricultural groups and researchers, and provides technical support to clients conducting new product research and development.

Following is a brief overview of AURI services. For more information, contact the office nearest you.

An Initial Project Assessment helps determine the technical and market feasibility of an ag-based product or technology. Applicants must demonstrate their projects will impact the use of traditional or alternative crops and livestock. The IPA program is designed to add value to agricultural commodities and foster long-term economic growth.

The Market Assessment Program identifies new or alternative market opportunities that add value to Minnesota farm commodities and benefit the state's producers. MAP is open to farm organizations, commodity groups, grower associations, agribusiness groups, public entities, nonprofit organizations and/or producer groups and is specifically designed for projects where a business or research partner is not yet involved in commercialization.

The Technology Transfer program identifies and develops value-added technologies and helps move technology from public and private entities to Minnesota businesses. Applicants must demonstrate the technology will impact commodity use.

The Pesticide Reduction Options program funds research and demonstration projects intended to reduce the use of petroleum-based products in farm production.

AURI's Applied Research Services complement technical and financial assistance. The Institute's research staff works with agribusinesses, university scientists, federal labs and commodity groups to access new technology and link it to commercial partners.

AURI also operates several **laboratories and pilot plants** that support innovative, ag-based product development. With staff expertise and commercial-grade equipment, the facilities offer a full range of services, from ingredient analysis to test production runs.

Facilities include:

- Pilot Plant and Product Development Kitchen, Crookston
- Waste Utilization Laboratory, Waseca
- Fats and Oils Laboratory, Marshall
- Meat Laboratory, Marshall

AURI Field Offices

Northern Office
Michael Sparby or Lane Loeslie
P.O. Box 399
Crookston, MN 56716-0599
1-800-279-5010

Central Office
Michael Sparby or Jody Koubsky
P.O. Box 188
Morris, MN 56267-0188
(320) 589-7280

Southwest Office
Dennis Timmerman or Nancy Larson
1501 State Street
Marshall, MN 56258
(507) 537-7440

Southeast Office
Lisa Giersvik or Mardell Jacobson
P.O. Box 251
Waseca, MN 56093-0251
(507) 835-8990

For e-mail addresses, visit AURI on the Web at: www.auri.org

ABOUT AG INNOVATION NEWS

Cindy Green, managing editor
Charles Smith-Dewey, designer
Deborah Hoeldtke, editing services
Rolf Hagberg, photography

Published by the Agricultural Utilization Research Institute to inform the food, agriculture and business communities and the general public about developments in ag-based products.



For information on AURI, call 1-800-279-5010 or visit our Web site: www.auri.org



Trademark of American Soybean Association

Address correspondence or free subscription requests to:
Dan Lemke, Communications Director
Ag Innovation News
P.O. Box 251
Waseca, MN 56093
Telephone: (507) 835-8990
dlemke@auri.org

BY CINDY GREEN

Clara City, Minn. — Americans happily munch down billions of pounds of chips, puffs, pretzels and the like every year. But it's common knowledge that fat and empty calories might lead to heart disease and obesity.

How can we have our chips and eat them too?

Ann Kazemzadeh is bringing the answer to health-food stores and fitness centers nationwide — Kay's Naturals organic protein chips, made in Clara City, Minn.

The small, cracker-like chips are loaded with flavor, from the lively Tex-Mex-style "nacho chili cheese" to the subtly-spiced "crispy Parmesan" and "soya-Caesar." The most distinctive varieties are the popular, zesty-flavored "lemon-garlic potato" and "gluten-free lemon herb."

The patented low-fat chips are made from soy protein and whole grains such as high-protein Egyptian wheat. A serving provides 8 to 9 grams of protein, 1 to 3 grams of fiber, 100 percent of the daily value of folic acid and vitamin B-12, and 30 to 40 percent daily value of calcium. You can pick up a six-ounce bag for \$2.79 at health-food stores, upscale groceries and Bally Fitness Centers.

Years of work take off

All of this activity started only a year and a half ago for Ann. A lawyer, she never considered managing a food business until she married Massoud Kazemzadeh. Soon after, she agreed to take over the company started in 1997 by Massoud's late wife, Linda.

The snack foods were Linda's idea. "She wrote the business plan and brought the people together," Massoud says. As a diabetic, she "was always looking for products that were healthy." Massoud, who holds a doctorate in food science, designed products for her. As an extrusion expert for Buhler Manufacturing in Minneapolis, he had spent years helping major food companies create high-value snack foods.

When Massoud left Buhler five years ago, the company "was kind enough" to give him pilot plant equipment in exchange for consulting work. He built his own clientele of cereal product manufacturers and designed his own patented processes and products, including flavorful, organic chips for his wife's company, Kay's Naturals (Kay is a nickname for Kazemzadeh).

Unfortunately, "she became extremely sick. The board tried to continue, but it is not the kind of thing you can do on the side," Massoud says. When Linda died, the company went dormant until Ann took over as CEO in late 1999. She quickly and aggressively sought national markets for the gourmet-tasting snacks that are balanced in protein and carbohydrates.

"I came from Texas with a background in law — no food background — but I decided someone had to devote full time to it and see



CHIPPIN' AWAY IN CLARA CITY

Ann Kazemzadeh is rebuilding a once-stalled company into an organic snack powerhouse.



PHOTOS BY ROIF HAGBERG

Ann Kazemzadeh is marketing a new line of nutritional, flavorful protein chips made in Clara City, Minn. Besides four flavors of low-fat chips, Kazemzadeh is designing other products such as stick cookies, salad toppings and pillow-like snacks with creamy fillings.

if we could make it happen," Ann says. "The fact that Massoud and his first wife did the groundwork diminished the risk."

Falling into place

Around the same time, one of Massoud's clients, Clara City pretzel manufacturer

Lighthouse Foods, went bankrupt. Tom Condon, a Clara City farmer and entrepreneur who owned the plant building, worried about the town of 1500 losing critical manufacturing jobs. Knowing Massoud's product-development expertise and business savvy, he asked him to take over the facility and start a new company.

Massoud says, "It was Tom Condon's original vision to keep manufacturing in Clara City and keep a workforce growing here." With his industry contacts and food processing expertise, Massoud says he also could see "great possibilities for a successful

CHIPPIN' AWAY TO PAGE 15

Special Focus Section:

FARMING FOR ENERGY



BY CINDY GREEN

Power has its price.

To run our cars, computers, homes, farms and businesses, our incomes are increasingly consumed by energy costs. The price of heat and electricity has soared; natural gas bills doubled last winter and propane prices have quadrupled in the past four years, according to recent articles in the Minneapolis Star Tribune.

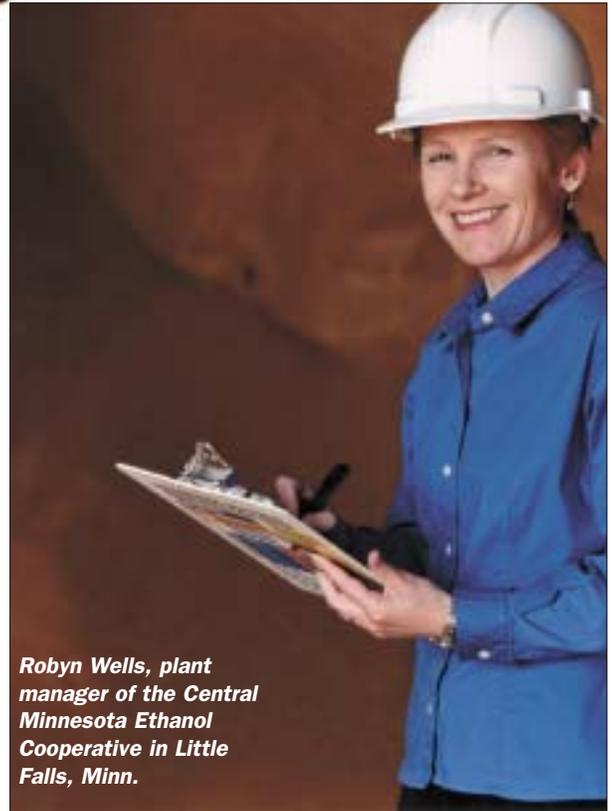
Although gasoline prices may be leveling off, "I don't think we'll ever see dollar-a-gallon gas again," says Max Norris, AURI oil scientist in Marshall. "The floor is going to be higher than it has ever been — we'll be happy with \$1.35 gas."

Proposed solutions range from driving more fuel-efficient cars to drilling oil in the Alaskan wilderness. But there are farm solutions as well — in crops and livestock.

This year, the Minnesota Legislature was the first in the nation to consider mandating a two-percent biodiesel blend in all Minnesota diesel pumps by July 2003 — a minimal mandate since studies show diesel engines run efficiently on up to 20-percent soy-based fuel. Soy-based additives reduce sulfur emissions and keep engines lubricated. Though political maneuvers socked the measure this year, Norris says supporters "may be deterred but we're not gone; we'll be back."

The added one-cent-per-gallon cost may be controversial, Norris says, but "we have to decide whether we want to contribute to an improved environment and if we're willing to spend a penny to do that."

There is also a national movement to add soy-based fuels to the 41 billion gallons of diesel consumed annually. U.S. Senators Mark Dayton, a Democrat from Minnesota, and Tim Hutchinson, a Republican from Arkansas, are cosponsoring a bill to provide a



Robyn Wells, plant manager of the Central Minnesota Ethanol Cooperative in Little Falls, Minn.

national three-cent-per-gallon tax credit for two-percent biodiesel blends. In the southwestern United States, gas stations are offering up to a 20-percent biodiesel blend.

Biodiesel is only one part of the farm energy solution. In this special focus section, Ag Innovation News looks at a resurgent interest in anaerobic manure digesters. Biogas captured by a digester on a central Minnesota dairy farm is generating more electricity than the farm family can use and they are selling it to their local power company. Ethanol production could become more profitable for farmer cooperatives as they investigate the value of coproducts, such as distiller's dried grains. And a power plant that will generate electricity from poultry manure is going up in Benson, Minn.

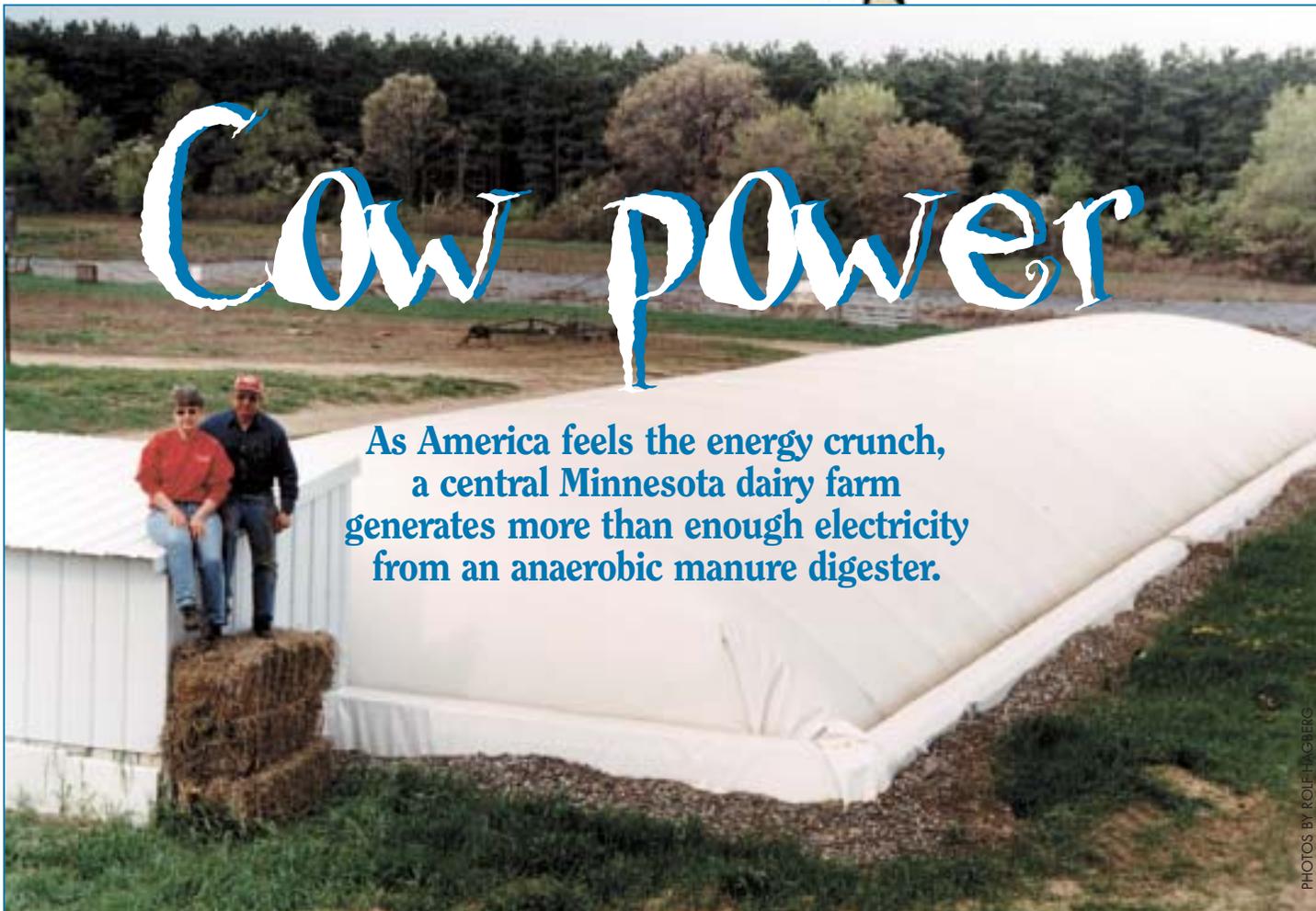
"You can burn anything and get energy out of it," Norris says. "I look at all these biocrops; these are materials that have energy potential — some will work better than others."

"We're on an alternative, renewable energy road that we must walk down." ■



Cow power

As America feels the energy crunch, a central Minnesota dairy farm generates more than enough electricity from an anaerobic manure digester.



PHOTOS BY ROBERTA SCHERER

Biogas captured in a digester tank on Dennis and Marsha Habenschild's 760-cow dairy farm generates 3,000 kilowatt hours of electricity daily, enough to power their farm plus 78 average homes. Digestion also reduces manure odor and creates a high-quality fertilizer.

BY E. M. MORRISON

Princeton, Minn. — For a time last winter, Dennis Habenschild's dairy cows were earning him 40 cents a day from their milk and 30 cents a day from their electricity.

Electricity from cows? That's right.

Haubenschild Farms is the first Minnesota farm to produce "cow power." The 760-cow family farm uses anaerobic manure digestion to produce methane for electricity. The waste digester supplies enough power to run the entire farm, plus 78 average homes.

Farm digesters are attracting widespread interest. State experts say these manure treatment systems could bring important economic and environmental benefits to Minnesota agriculture. The technology lets farmers make a valuable new ag product —

electricity — while reducing odor and creating high-quality fertilizer.

Manure to methane

The dairy cows at Haubenschild Farms produce 22,000 gallons of manure a day. That manure, in turn, yields about 80,000 cubic feet of "biogas" a day — enough to generate 3,000 kilowatt hours of electricity. How does it happen? It is microbe magic.

Cow manure, together with recycled newspaper bedding, is scraped from the freestall barn three times a day, mixed to a smooth consistency, then pumped into a 350,000-gallon covered digester tank, which looks like a long white sausage.

There, the manure is heated to about 100 degrees F speeding the action of beneficial



bacteria in the tank. As bacteria break the manure down, they give off gas — mostly methane, which collects under the tank cover. After three weeks in the digester, the manure — now a lot less smelly — empties into a storage lagoon for later application to the farm's 1,000 acres of cropland.

Juice to run the farm

Captured methane is burned in a retrofitted natural gas engine, which drives a 150-kilowatt electrical generator. Recovered heat from the engine warms the digester and the barn floors.

About 45 percent of the Haubenschilds' electrical output is distributed on the farm, offsetting \$700 a week of electricity expense, Dennis Habenschild says.

The rest of the electricity is sold to a local power cooperative, East Central Energy, which markets it as renewable energy. An enthusiastic partner in the project, East

Cow power TO PAGE 11



'Bug' boost for ethanol

Anaerobic digesters have been used to clean wastewater for decades. Now, the Minnesota ethanol industry is adopting the technology to improve efficiency and produce supplementary power.

BY E. M. MORRISON

Morris, Minn. — Taking care of bugs is part of Dori Coler's job description.

Coler is a biologist at DENCO, an ethanol processing plant in Morris. One of her jobs is to make sure the bacteria in the plant's anaerobic digester are healthy and happy. The bacteria clean the plant's wastewater and give off methane as a byproduct.

DENCO is one of several Minnesota ethanol plants using anaerobic digestion to boost efficiency, says Gerald Bachmeier, manager of DENCO, a 353-member limited liability company with annual sales of \$30 million. Eventually, the digestion process will provide the plant with supplementary fuel as well.

Wastewater from the plant flows into a 30,000-gallon bioreactor, which looks like a tall, silver silo. Inside the reactor is a floating bed of hardworking bacteria. These "methanator bugs" break down chemical wastes in the water, removing more than 90 percent of the impurities that interfere with ethanol processing. The water is left clean enough to be reused in fermentation, Coler says.

The DENCO plant, which is working with AURI on new product development, produces about 18 million gallons of ethanol a year. The digester has boosted fermentation efficiency by 15 percent, Bachmeier says. "It cuts our disposal costs and lets us reuse more water." The \$300,000 system paid for itself in less than a year, he says.

The "methanator bugs" that clean DENCO's wastewater also produce between 4 and 20 cubic feet of methane per minute. Currently, this gas is flamed off.

But later this year, Bachmeier says, the methane will be captured and used to run drying equipment. Bachmeier expects the plant's homegrown methane to offset about seven percent of the natural gas needed for drying. ■



PHOTO BY ROY HAGBERG

Manure to methane: does it pay?

BY E. M. MORRISON

As interest in manure digesters grows, the key question for farmers is: Does it pay?

The answer: It depends.

That's according to a 2000 report from Project Minnesota, a rural economic development organization that examined the performance and financial viability of Haubenschild Farms' plug-flow digester.

The report, available at www.mnproject.org, identified several variables that affect digester profitability, including:

- size and type of livestock operation,
- type and age of facilities,
- manure collection and storage methods,
- farm electricity expense,
- excess power sales opportunities,
- expansion plans,
- capital investment needed, and
- financing costs.

The Haubenschild Farms' 900-cow digester, for example, cost \$355,000 to construct. It was built with \$278,000 in government grants and zero-interest loans as part of a research project sponsored by the State of Minnesota and AgSTAR, a federal environmental program. Haubenschild Farms contributed equity of \$77,000.

Traditional lenders were unwilling to finance the project, says Dennis Haubenschild.

Projections based on ten months of data from the Haubenschild operation show that, even with financing costs, a "900-cow digester will pay for itself in a reasonable time period — four to six years," according to the Project Minnesota report. Haubenschild projects a

five-year payback on his 760-head operation.

However, digesters are probably not feasible for smaller livestock operations, according to Peter Ciborowski, an official at the Minnesota Pollution Control Agency. Ciborowski recently finished a detailed financial analysis of anaerobic manure digesters for MPCA. The report will be available later this year.

Ciborowski's research suggests that dairy farms need at least 500 cows and six cents a kilowatt hour to operate a digester profitably. Economic thresholds for swine manure digesters are much higher — at least 5,000 finishing hogs, he estimates.

Clearly, manure digesters are not right for every Minnesota livestock farm, says Jack Johnson, AURI engineering services director in Waseca. Still, he adds, there's a growing recognition that digesters could help control odor and contribute to energy self-reliance, and their viability improves as energy costs rise. "There's great potential for this technology."

Ciborowski agrees. He predicts that within a decade, up to 30 percent of Minnesota dairy farms will be large enough to operate profitable digesters. "It's a win-win," he says. "A pollution control technology that can be cost effective, too." ■

For digester farmer wannabes

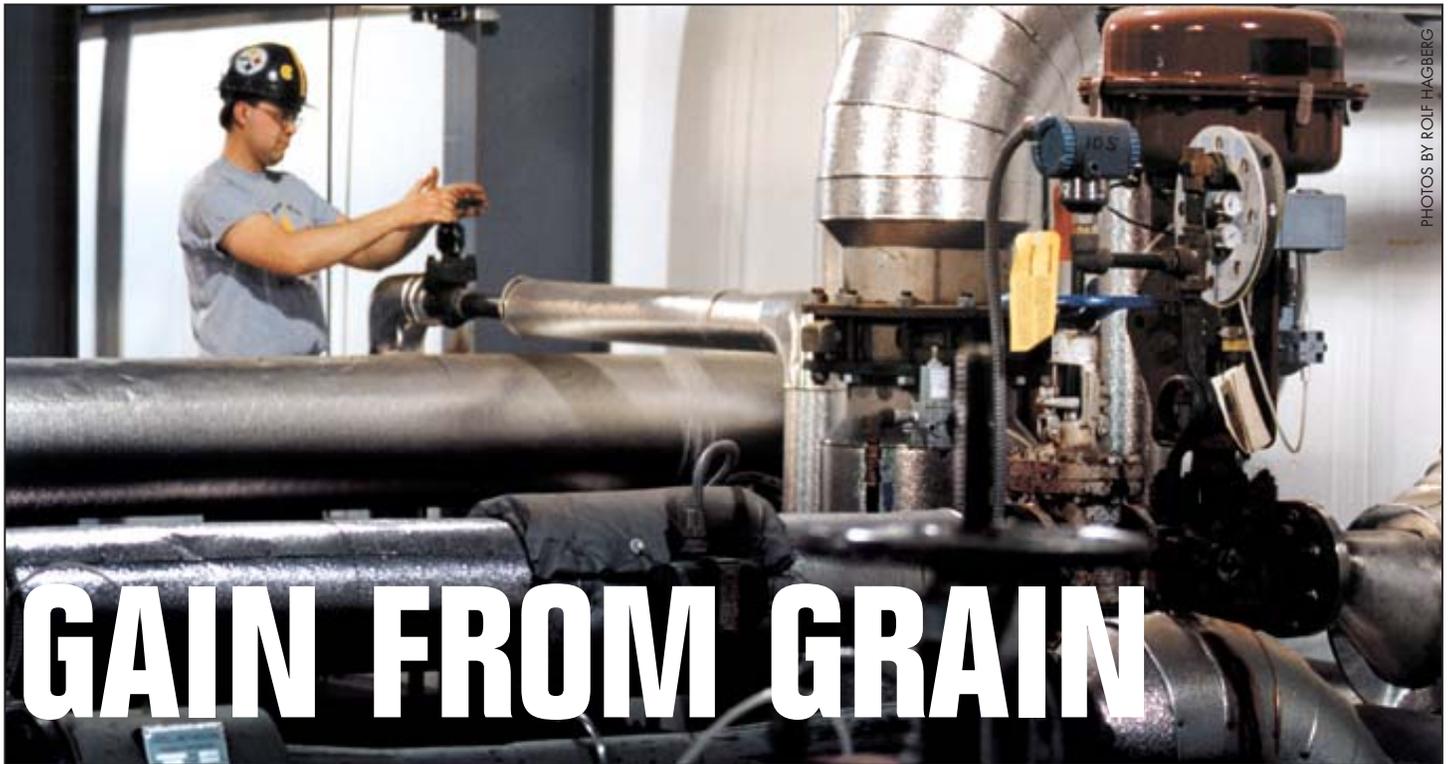
Would a manure digester make financial sense on your farm? A new program from AURI helps sort out the benefits and risks of installing a manure digester.

The program, called "A Self-screening Assessment and Checklist," is available from AURI at www.auri.org/research/digester/digchck.htm

The Assessment and Checklist can calculate the capital investment that would be needed to build a manure digester, and helps estimate operating costs and returns. The site also explains the different methods of manure digestion and offers links for more information and technical assistance.

The Minnesota Department of Agriculture is also offering zero-interest loans to farmers interested in demonstrating anaerobic manure digestion technology on their farms. These competitive loans are available in amounts up to \$64,000. Applications will be accepted until July 31, 2001. For more information, call Matt Drewitz, of the Minnesota Department of Agriculture Development Division, at (651) 296-3820. ■





PHOTOS BY ROLF HAGBERG

John Freidig checks systems at the Central Minnesota Ethanol Cooperative in Little Falls, Minn., one of 13 dry-mill ethanol cooperatives in Minnesota eligible for producer credits. Wheat and barley farmers want the credits extended so a grain-based plant could be built in northwest Minnesota.

As gas prices soar and ethanol subsidies expand, northern grain producers renew interest in building an ethanol plant.

BY GREG BOOTH

If ethanol producer credits were to be extended, wheat and barley farmers could benefit, an AURI-sponsored study reveals.

Currently, producer credits are limited to the state's existing 13 dry-mill ethanol plants. Extending the limit to allow a grain-based ethanol facility to be built in northwest Minnesota was proposed in the Minnesota Legislature this year, and although it did not pass, the issue will be back. Marv Zutz, executive director of the Minnesota Wheat and Barley Council, says it would be a big boost for grain farmers. "The numbers we're getting back are positive for barley usage in ethanol production," he says.

But to make grain-based ethanol profitable long-term, ethanol plants will have to make

more than fuel, the study says. Ideas for coproducts include nutritional supplements, paper pulp and distiller's grains for feeding livestock. "We have opportunity here, and by golly, it's fun," says AURI scientist Max Norris of Marshall.

Measuring profitability

The feasibility study, prepared by BBI International of Cotopaxi, Colo., looks at three potential sites for ethanol production — Angus, Moorhead, or near the American Crystal Sugar plant in Crookston.

A plant that produces 15 million gallons per year, using wheat, corn or barley, could be profitable if the state producer credit was extended, according to the study. Without the credit, a plant yielding 45 million gallons per year would be profitable.

Enough corn is grown around Moorhead to support such a plant and enough barley is grown in the Crookston, Angus and Moorhead areas to support a 15 million gallon plant, says Michael Sparby, AURI project director in Morris who has been working with a northwest Minnesota ethanol cooperative committee.

Coproducts will be essential to the success of any ethanol plant, Sparby says. For example, barley coproducts could generate healthy food additives and beet sugar, unsuitable for food use, could be used in the ethanol process, Norris adds.

Shifts in the wind

A similar study done in 1999 showed promise for a northwest Minnesota farmers' ethanol cooperative, Sparby says, but markets were not seen as strong enough to support a new plant. "Once the industry shifted, with higher prices, interest was piqued again," he says.

The most likely scenario, Norris says, will "probably be a barley plant." Building a plant for "mixed streams" — adaptable to various ethanol-producing feedstocks — would add flexibility to the cooperative, he says. Such a plant could use scabby wheat or corn if barley prices increase substantially.

"The best plant size would be a 30 to 40 million gallon capacity," Zutz says. "But then other concerns go with that. It's best to start small and have the potential to expand."

Possibility fun

"Probably most exciting is the possibility of extracting beta glucans from the barley, selling those into the food market, and putting the waste stream from that process through the ethanol plant," Zutz says.

Beta glucans, also found in oats, have been shown to lower cholesterol levels in humans. Unlike beta glucans from oats, Zutz says, barley's beta glucans do not add a nutty flavor to foods, making them desirable for blending with wheat products.

Zutz says the Minnesota Wheat and Barley Council has also looked at making paper pulp from wheat and barley straw. But the key to profitability for any producer-owned plant, Zutz emphasizes, is combining three ingredients: nutritional food products, ethanol and animal feed products. ■

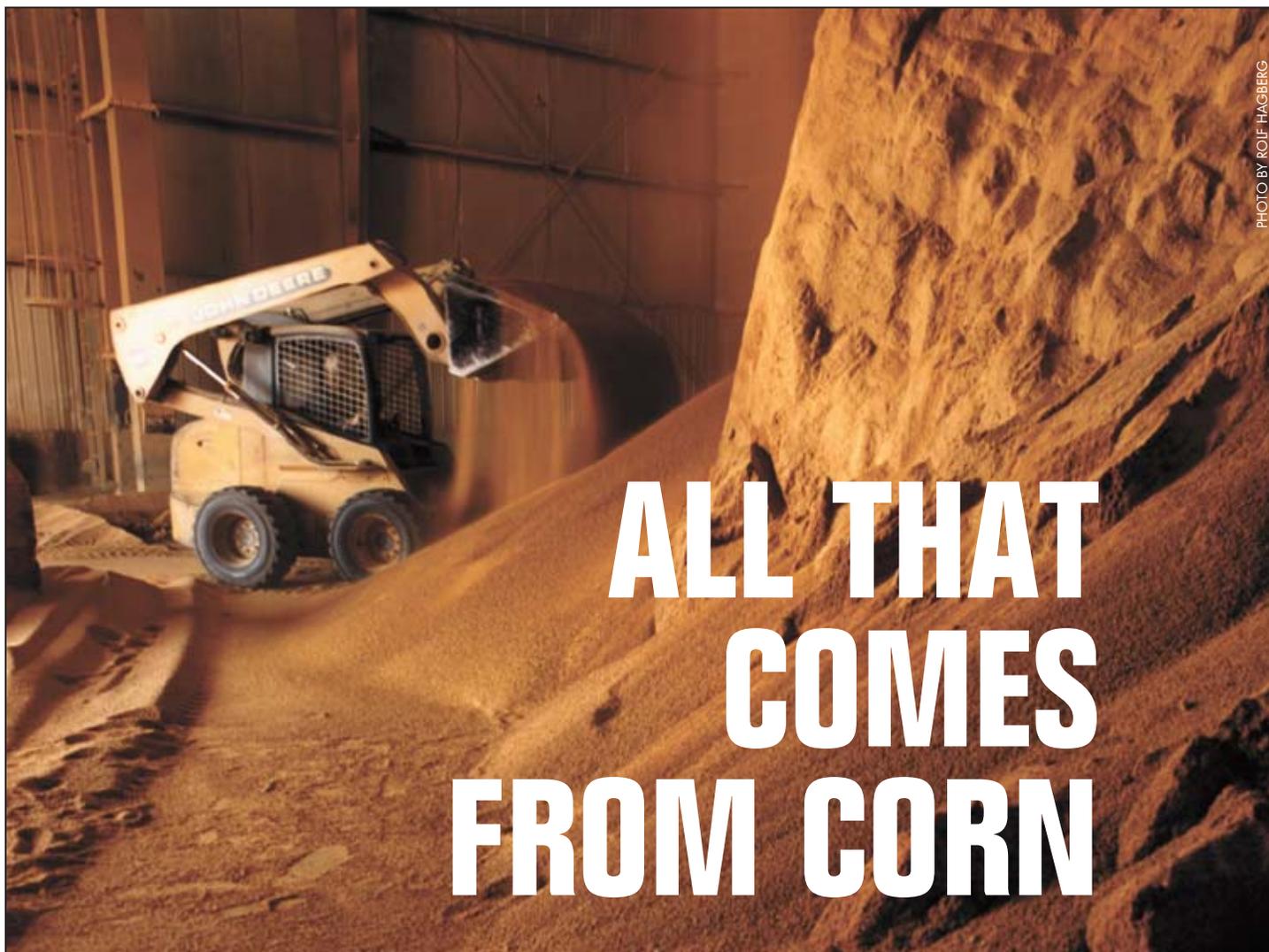


PHOTO BY ROIF HAGBERG

ALL THAT COMES FROM CORN

A coalition of Minnesota and South Dakota ethanol producers are studying ways to make their plants more profitable, such as using distiller's dried grains, an ethanol coproduct shown above, for hog and poultry feed.

BY GREG BOOTH

Minnesota's corn ethanol plants may be feeding your gas tank, but they'd like to feed more hogs and turkeys, too. That's the job of Midwestern DDGs Association, a nonprofit task force of ethanol producers that AURI helped organize.

Midwestern DDGs conducts a check-off program for research into the benefits of feeding dried distiller's grains (DDGs) to hogs and poultry. "We're also looking at other

programs that would enhance the value of distiller's grains and grow the entire industry," says Richard Eichstadt, task force member and general manager of Pro-Corn, an ethanol plant in Preston, Minn.

Midwestern DDGs counts most ethanol plants in Minnesota and South Dakota among its members, "and we will bring in other plants as they start up in other states," Eichstadt says. Most of its research is being conducted at the University of Minnesota, with additional

research at South Dakota State University. Researchers are looking at the quality of pork loins and turkey breasts from animals fed on DDGs, which can compete with soybean meal feed.

"The results look encouraging," Eichstadt says. "We need to continue and ensure that the results get to the appropriate people."

"We also need a spokesman for DDGs," says Max Norris, AURI scientist in Marshall. He says a nutritionist to answer questions from

the livestock industry about DDGs is vital to expanding markets. Another key component is "consistency between the 13 dry-mill plants (in Minnesota). ... The product has to be consistent."

The task force is looking at other ways to improve ethanol plants' profitability, Norris says, including reducing plant energy use, degerming corn and marketing the oil, and exploring markets for diesel fuel. ■



A fertilizer made from distiller's grain and fish may protect Minnesota's liquid assets.

BY E. M. MORRISON

Alexandria, Minn. — A new fishy fertilizer can green lakeshore lawns and keep lakes clean at the same time.

Bio Builder of Alexandria is manufacturing a phosphorous-free fertilizer made from corn distiller's dried grain and rough fish. Thrivin' Natural and Organic Turfgrass Fertilizer eliminates phosphorus runoff, giving lakeshore owners a way to grow green grass rather than green lakes. The environmentally-friendly product was developed with help from AURI by Josh Zeithamer of Alexandria, a 19-year-old college student and entrepreneur.

Green lake syndrome

Zeithamer is from Douglas County, a central Minnesota region marked by some 350 prairie lakes. Growing up in a prime water-recreation area gave him a keen awareness of the link between green lawns and green lakes.

Excess lawn fertilizer washing into surface waters promotes algae blooms that suffocate game fish, destroy water clarity and ruin swimming and boating. Phosphorus — an element of nearly all lawn fertilizers — is the biggest culprit. It takes just one pound of phosphorus to grow 500 pounds of algae. In the Twin Cities alone, homeowners apply over six million pounds of phosphate-containing fertilizer a year, according to a study by the Suburban Hennepin Regional Park District.

Bans not enforceable

Recognizing the threat posed by runoff, counties and cities are beginning to ban phosphorus fertilizer use, says Paula West of Brainerd, executive director of the Minnesota Lakes Association.

At least 15 metro-area cities have banned residential applications and half a dozen counties already have shoreline bans — among them, Douglas County, which prohibits phosphorus within 50 feet of public waters. In addition, the Minnesota Legislature this year took up several proposals to limit or ban the use of phosphorus lawn fertilizers.

Such bans are hard to enforce, West acknowledges. And compliance is hindered by a lack of alternatives. West, also a consultant for Ace Hardware stores, says phosphate-free fertilizers are hard to find.

"None of the major manufacturers makes a phosphate-free fertilizer, and most major retailers don't carry them in their warehouses. This is the first year Ace Hardware has carried a zero-phosphorus product."

Jumping in

Josh Zeithamer saw an opportunity. So the summer before his senior year of high school, he formed Bio Builder and set out to create a phosphate-free fertilizer for lake country.

By that time, he already had several years of experience in the fertilizer industry. His father, Alexandria businessman Alan Zeithamer, manufactures fertilizer from liquefied carp and bullheads. The product is sold through a Kansas distributor to certified organic farmers.

Green lawns, clear lakes



PHOTO BY KAY MITHALUGEN

Growing up in the central Minnesota lakes region, Josh Zeithamer of Alexandria knows that phosphorous can turn lakes green as well as lawns. So the 19-year-old college student developed a phosphate-free lawn fertilizer made from an ethanol byproduct — distiller's dried grains — and carp.



POULTRY POWER IN MOTION

A power plant burning turkey litter nears reality in central Minnesota

BY E. M. MORRISON

Benson, Minn. — A \$100 million project to burn turkey manure for electricity, the first of its kind in the country, is progressing steadily in Swift County.

Fibrominn, a subsidiary of the British electric company Fibrowatt, will build a 50-megawatt power plant in Benson — a site chosen last December from more than a dozen potential locations in central Minnesota, where the state's poultry industry is concentrated.

The planned power plant could burn 500,000 tons of turkey waste a year, producing enough

electricity to supply more than 67,000 households.

Solidifying support

In late March, the Minnesota Public Utilities Commission approved a 22-year power purchase agreement between Fibrominn and Xcel Energy (formerly Northern States Power Company). The agreement forms part of a 1994 NSP compromise with the Minnesota Legislature; Xcel Energy is required to provide 125 megawatts of electricity from biomass sources in exchange for storing radioactive waste at its Prairie Island nuclear plant.

In May, the Minnesota Legislature considered exempting Fibrominn from annual personal property taxes on plant equipment. The exemption would be worth about one million dollars a year, according to Robert Wolfington, Benson city manager. The proposed exemption does not include real estate property taxes, he notes.

The Minnesota Legislature also considered forgiving sales taxes on construction materials for the plant, a one-time exemption worth about \$800,000, Wolfington says. At press time, the legislation was tied up in a special session.

Community connections

In April, a citizen panel was formed to address public concerns related to the Fibrominn plant. The 12-member group will advise the company on odor, truck traffic and other issues, encouraging open communication between local residents and Fibrominn, Wolfington says.

Meanwhile, AURI is working with central Minnesota farmers and agribusinesses interested in processing or marketing ash from the plant, says Jack Johnson, manager of AURI's coproducts utilization program in Waseca. The ash, a byproduct of burning turkey manure, is a concentrated source of phosphorus, potash, organic matter and other plant nutrients.

Currently, Fibrominn is waiting for permits from the State of Minnesota, then it will seek financing. The \$100 million deal could be in place as early as September, Wolfington says. "As you can imagine, this is a good time to build a power plant." ■

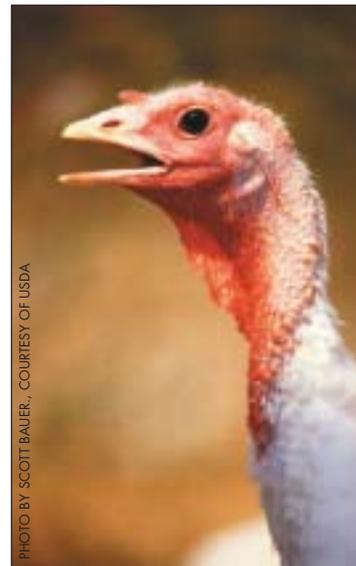


PHOTO BY SCOTT BAUER, COURTESY OF USDA

Before the corn dogs and grand stand shows, make tracks to **Agri-Land!**



Join **AURI** at the State Fair Agri-Land (formerly Machinery Hill) August 23 through September 3

See what and who is shaping the future of Minnesota agriculture.

Join AURI at Farmfest 2001

Stop by AURI's tent: lot 610.

- See new, value-added uses for crops.
- Meet the entrepreneurs who are making it happen.
- Explore the future of agriculture.

August 7, 8 and 9
South of Redwood Falls on Highway 67



Dairy farm's manure methane nearly as valuable as milk

Cow power FROM PAGE 5

Central Energy pays 7.25 cents per kilowatt hour for the Haubenschilds' excess electricity — the full retail rate.

Farm sales of electricity average \$900 a week, Haubenschild says. When milk prices fell to all-time lows last year, his net returns from energy approached those from milk.

Smell begone

The Haubenschild digester, called a plug-flow, has been operating since September 1999, generating electricity with 98.6 percent reliability, Haubenschild says. But the system delivers other benefits besides electricity.

One of the most significant is odor reduction. "Odor is an important social issue," one that often hamstrings livestock expansion, Haubenschild says. It's also an issue that touches him where he lives: "I don't like to smell manure any more than anyone else. We put in our first lagoon in 1978, right next door to our home. The smell! I thought, there has to be a better way."

Even more important, he says, digestion creates a high-quality fertilizer, converting the nutrients in manure into a more usable form and destroying weed seeds. "That's the biggest reason to work with digesters; manure is your true renewable resource," says Haubenschild,

who carries the value of stored manure on his farm balance sheet at \$5 per thousand gallons.

The University of Minnesota is conducting a three-year field study to compare the performance of digested manure with raw manure and commercial fertilizers. But Haubenschild is already sold: "It's saving our farm fertility."

Committed over time

Three generations earn their living from the sandy soil of Haubenschild Farms.

In 1952, Dennis' parents, Donald and Myrtle, began farming in Isanti County, running a diversified crop and livestock operation that included ten dairy cows. Over the years, they expanded the dairy herd to 24 head, then 44, installed a freestall barn, then doubled the herd again when Dennis and his wife Marsha joined the business in 1975.

By 1998, the family was milking 150 cows. When Dennis and Marsha's sons, Tom and Bryan, wanted to start farming, too, "that meant we had to expand," Dennis says.

The family planned a 1,000-head dairy. Dennis, a member of the Minnesota Feedlot and Manure Management Advisory Committee, was well aware of the manure and odor problems associated with a dairy feedlot of that size. Installing a digester was a way to

expand "in an environmentally sound way."

Digesting in the basement

Dennis, 53, has been interested in waste digesters since college. "I had a little digester in the basement. Instead of brewing wine, like other college kids, I was brewing methane. So I knew it worked."

In fact, small anaerobic digesters have been used in China and India for decades, and more than 450 farm digesters generate fuel in Europe. In this country, dozens of manure digesters were built in the 1970s and '80s, says Jack Johnson, AURI engineering services director in Waseca. Many of those failed, he says, because of high capital costs and a low return on investment. Now, he estimates, fewer than 45 manure digesters exist on U.S. farms.

Interest surges

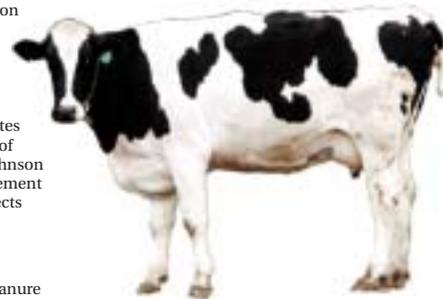
But recently there has been renewed interest in the technology. Several states are supporting farm demonstrations of dairy and swine manure digesters, Johnson says. AgSTAR, a federal waste management program, sponsored 13 digester projects around the country, including the Haubenschilds' digester.

Larger feedlots, new environmental regulations and public outcry over manure

odor and greenhouse gases are all influencing the resurgence of digesters, Johnson says. Energy deregulation, rising fuel costs, and growing demand for green power have also spurred interest. In addition, digesters are better designed and more efficient now, he says.

The Haubenschilds have been swamped with inquiries about their system, especially as the energy crisis in California intensifies. In the past 18 months, Dennis says, several thousand people have toured the farm, "and we've had hundreds of calls and e-mails from all over the country."

"Interest in digesters is really growing." ■



Distiller's grains and fish teamed in eco-friendly fertilizer

FISHY FERTILIZER FROM PAGE 9

Josh began helping his dad in elementary school. "I started out pounding lids on buckets and filling buckets, and by the age of 16, I was doing everything." The liquid fertilizer is a small operation — but it was a good way to get a hands-on education, Josh says.

A totally new use

Josh and his dad wanted to incorporate their liquid fish fertilizer into an easy-to-use dry product for turf grass. They tried drying the liquid in a vacuum dryer, but that proved too expensive. Then they hit on the idea of blending it with distiller's dried grain.

A coproduct of ethanol processing, distiller's dried grain is cheap, low in phosphorus, and a good source of slow-release nitrogen. Currently, it is sold for animal feed. Fertilizer, Josh says, "is a totally new use."

Robyn Wells, manager of Central Minnesota Ethanol Cooperative in Little Falls, was intrigued by Josh's idea. "We're looking for ways to expand the market for distiller's dried grain," she says. A 15-year veteran of the ethanol industry, Wells agreed to help Bio Builder develop a fertilizer based on distiller's dried grain, which is likely to be in oversupply as new ethanol plants come on line.

With technical assistance from AURI, Josh and his dad tested nearly two dozen fertilizer blends. "We thought we had a formula we liked," Josh says, "but it couldn't be feasibly processed, so we had to go back to the drawing board." After months of trial and error, "we nailed down a formula we liked and a manufacturing process."

The final product, called Thrivin', is a blend of whole nongame fish and corn distiller's dried grain, plus molasses, urea, limestone and soluble iron. It looks and smells like cornmeal and can be applied with a broadcast spreader. The Zeithamers tested Thrivin' last summer on turf grass plots in Douglas County, achieving vigorous plant growth and dark green color, Josh says.

Last fall, AURI helped Bio Builder develop packaging and promotional materials and get labels approved in the five-state area. Early this year, the Zeithamers began manufacturing the fertilizer in a converted barn.

'Greener' soil?

Thrivin' benefits both soil and water, Josh says, building up soil tilth and microbes with organic matter and protecting surface waters from phosphorus runoff. These benefits led the Minnesota Department of Transportation to include Thrivin' in fertilizer trials this summer near

Baxter, on Minnesota Highway 371.

After the ravages of road construction, says Dwayne Stenlund, a MnDOT soil ecologist, there is a need for "products that add life forms back into the soil" while protecting environmentally sensitive areas such as lakes, wetlands and streams below bridge abutments, ditches and slopes.

Carp baggers

There are other benefits, says Jody Koubsky, AURI program specialist in Morris. Besides adding value to distiller's dried grains, Thrivin' opens a new market for carp, a rough fish that lake associations are eager to get rid of, she says.

As bottom-feeders, carp compete with more desirable game fish, sometimes overrunning a lake. They also stir up the bottom, clouding the water with sediment. There is a market for carp on the East Coast, says Jeff Riedemann of Cambridge, president of the Minnesota Inland Commercial Fisherman's Association. But it's not economical to harvest the fish in Minnesota unless lake associations underwrite part of the expense, he says.

Local demand for carp would allow a larger annual catch, benefiting both lakes and the fishing industry, he says. "So we're hoping companies like Bio Builder can get going."

Up against the majors

Bio Builder expects to sell about 200 tons of Thrivin' this season. The product is available at several dozen garden centers and retail stores around the state, including Mills Fleet Farm and Ace Hardware.

It will be tough competing with the major players in the \$5 billion fertilizer industry, acknowledges Josh, who manages to sandwich the venture in between a full classload at North Dakota State University and his 80-acre native grass seed operation. At the same time, he adds, "There aren't many other suppliers of organic, phosphate-free fertilizers. Our biggest challenge will be making consumers aware that they have an alternative."

That's a challenge he relishes, adds Josh, winner of an FFA Kaufman Foundation Entrepreneurship Award and a DECA marketing award.

"I love talking to customers, seeing what they want, what they need. I like the challenge of creating a new product." Beyond that, "I'm extremely motivated to do the right thing when it comes to our environment."

For more information on Bio Builder, email: biobuild@rea-alp.com or call (320) 766-7730

Editor's note: This is the third installment in a four-part series following one year in the life of Bruce Tiffany, an entrepreneurial farmer who developed wildlife treats from local commodities. Tiffany is now bagging samples for retailers and prioritizing his time among his new venture, diversified farm and repair business.

BY CINDY GREEN

In less than a year, Bruce Tiffany invented a new ag product, formulated it, tested it, labeled it, bagged it and turned a backyard granary into a production plant equipped with machines of his own design.

Then came spring and mud and calving and planting — and Tiffany put his commercial wildlife treat project on the back burner. It's time, he says, to "let things simmer so the flavors come out." As a diversified farmer and farm machinery repairman, "I do one project as hard as I can, then I slack off and do something else hard ... It gives you time to reflect and gather your thoughts on how you want to assault (the first project) again."

Something's got to give

While he drives the tractor and thinks, Tiffany has concluded that to keep his wildlife treats venture going, something has to give. "I'm probably over-employed doing too many things, so to find the time to do this properly, I have to make the decision on what's going to be eliminated."

In two years, his oldest son graduates from college and will likely return to the farm — another reason to make some decisions.

Either the livestock or the repair business must go, Tiffany says, but he'll continue farming 1500 acres of corn, wheat, alfalfa, soybeans, sweet corn and peas. "The repair business is fairly risk-free money, but livestock is a nice complement to the farm. It's more likely the repair business will go."

A difficult farewell, since Quality Repair by Tiffany was built on word-of-mouth advertising by loyal, satisfied customers. But the repair business is changing and Tiffany says he doesn't know that he wants to change with it. "People farming today aren't necessarily the same ones I started with; many have retired or moved on. There aren't as many farmers and the machines they're operating are different."

The life and times of an ENTREPRENEUR

PART THREE OF
A FOUR-PART
SERIES



Bruce Tiffany often conjures up moneymaking ideas while driving tractor, which led him to design wildlife treats made from a corn and pelletized apple blend. He is now contemplating what to give up — livestock or a repair business — to make time for his new venture.

New challenges ahead

Tiffany would rather shift focus to his new business, making Trophy Treats™ to attract deer and wild turkey for hunting or Nature's Treats™ to attract animals for backyard feeding. A typical entrepreneur, he finds energy in risk and challenge.

"One of the reasons for doing (wildlife treats) is things were going pretty well around here, and we needed to mess it up a little bit," he laughs. "It's easy to go with the flow and not take risk. ... I never want to get too comfortable."

He contends that everyone is attracted to challenges — even people who just watch from their own comfort zone. "Look at all the interest in extreme sports ... and why is "Survivor" a hit? People want to watch other people in danger."

On the other hand, Tiffany doesn't want "to lose everything I've already gained." So he's paying careful attention to the market and getting to know the retailers and customers before leaping into full-blown production and piled-up inventory.

This winter, he attended the Minnesota Deer Hunters state banquet in order to get a feel for the customers in his future market. By understanding the hunters he will sell to, Tiffany says he can sharpen his sales and promotion strategy.

The six-state strategy

With the help of retired 3M marketing specialist Russ Bremner, funded by Minnesota Technology and the Southwest Minnesota Foundation, Tiffany has put together

a database of all 1600 sporting goods stores in Michigan, Wisconsin, Minnesota, North Dakota, South Dakota and Wyoming.



Wildlife treat idea simmers

Tiffany is preparing a direct mail campaign to select stores, which he will follow up with phone calls, product samples and personal visits. "Running around the countryside could be expensive and time consuming. We'll start with the independents, those more interested in giving us feedback.

"Russ says, 'Realistically, if you could get 10 percent to purchase your product, that would be good,' so we'll see. ... He also said, 'Put a mirror by your phone and put a smile on your face when you pick it up.'"

Bagging at a bargain

Tiffany is confident in the product he is selling; it's been tested and proven with the help of AURI's Al Doering in Waseca. Recently, Doering significantly improved the product's shelf-stable qualities by finding a dry version of a wet ingredient they were trying to pelletize. "Al goes above and beyond the call of duty ... he pays close attention to detail," Tiffany says.

When the orders start coming in, Tiffany will be ready for full-scale production. Last winter he removed partitions and bins from a 500 square-foot granary, wired it for electricity and assembled production equipment.

Tiffany likes to invest time and ingenuity but is tight with money. He proudly points out the \$1 lights gleaned from salvage yards and the bagger designed from parts of used equipment. "Everything works and nothing has caught on fire," he laughs. "This scale (which can measure to a thousandth of a pound) I'm told is worth about \$5,000." He doesn't divulge what he paid, but smiles and says, "Well, it wasn't that much."

Corn in an exterior bin is augured inside to a blender where it is mixed with sweet-smelling apple pellets. The blend enters a bagging machine that can fill a 10-pound bag every two seconds. Next, the bag is secured with a heat sealer, checked for weight and stacked on carts, ready to be boxed for truck transport.

"I did splurge a little on those carts," which look like oversized child's pull wagons. "I paid \$70 each, but I priced it out and it would have cost more to make them myself," Tiffany says.

Lingering over a logo

Doing it alone has drawbacks, Tiffany admits. He and his wife Ann stalled on getting out promotional materials and printing labels because even though the labels were designed by a graphic artist, they wanted to

add a Tiffany Family Farms logo that they created and couldn't agree on a final design.

"We want it to be right; we don't want to be changing it," Tiffany says, adding it should be a quality mark not only for the wildlife treats but other products they develop. The Tiffanys finally decided to have their logo professionally designed.

Within the next several months, Tiffany would like to see his treats on store shelves. But he realizes that getting from idea to retail may be more risky and nebulous than farming. "There is no definite beginning and, unlike a harvest, there is no definite end." ■

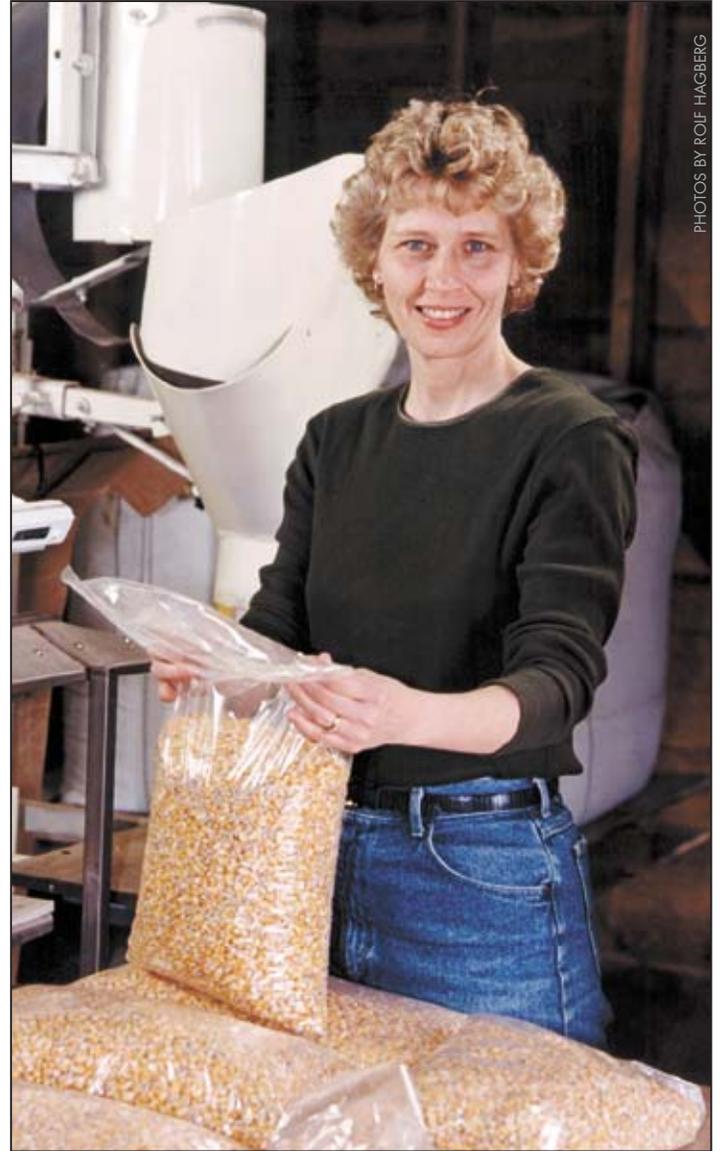
"I'm probably over-employed doing too many things, so to find the time to do this properly, I have to make the decision on what's going to be eliminated."

— Bruce Tiffany

If you missed the first installments you can read them online:

<http://www.auri.org/news/ainjan01/08page.ht>

<http://www.auri.org/news/ainapr01/08page.htm>



Ann Tiffany bags wildlife treats in a converted 500 square-foot granary that Bruce Tiffany gutted, wired for electricity and fitted with salvaged or custom-designed equipment, including bins, a blender, bagger and sealer.

PHOTOS BY ROIF HAGBERG

in the summer sun

Elsewhere in ag utilization

BY JOAN OLSON

Editor's note: As a service to our readers, we provide news about the work of others in the ag utilization arena. Often, research done elsewhere complements AURI's work. Please note that ARS is the research arm of the USDA.

Cancer says "bye bye, berry"

Years of research on strawberries and raspberries have shown the berries inhibit development of colon and esophageal cancers in rats. Now researchers at Indiana University and Ohio State University have discovered the berries reduce the ability of benzo(a)pyrene, a carcinogen found in tobacco smoke and the environment, to transform normal cells to cancer cells in the lab. The reduction rate in some cases was as high as 90 percent. Human clinical trials on the berries' cancer-inhibiting effects began in May.

In other research, an ARS plant pathologist has found that strawberries, blueberries and raspberries contain chemicals that can protect cultured cells against cervical and breast cancer.

Source: Gary Stoner, Ohio State University, (614) 293-3713, stoner.21@osu.edu; David E. Wedge, USDA-ARS Natural Products Utilization Research Unit, (662) 915-1137, dwedge@olemiss.edu

Plantastic

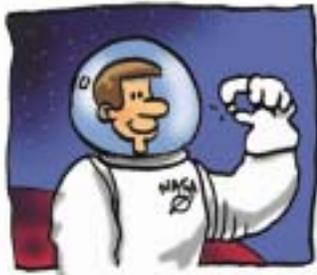
Scientists have found the gene that allows plants to package and store materials in their cells. The discovery may open the door to producing new types of plant plastics. A patent application for using the gene for monomer production has been filed jointly by Purdue University and DuPont and Co.

Source: Clint Chapple, Purdue University, (503) 756-3552, chapple@purdue.edu

Soy in space

The Iowa Soybean Promotion Board and the Soyfoods Council have been accepted as Corporate Founding Partners of the NASA Food Technology Commercial Space Center program. They are working with Iowa State University to find a way to mill soybeans that astronauts can use in space.

Source: Doane's Agricultural Report, February 16, 2001.



Stickier than blood

A soy-based foam extrusion glue could give the plywood industry faster production at lower cost. ARS researchers used 3.5 to 5.5 percent soy flour to replace animal blood protein in plywood glue. The new formulation requires less drying time, less water and produces less waste than conventional plywood glues. It could create a domestic market for nearly one-half million bushels of soybeans annually.

Source: National Center for Agricultural Utilization Research, Peoria, Ill., (309) 681-6350, hofillmp@ncaur.usda.gov



Ethanol times four?

At the sixth annual National Ethanol Conference, Nebraska Governor Mike Johanns released a study claiming that quadrupling ethanol production over the next 15 years would boost U.S. GDP by \$685 billion. If the likely phase-out of MTBE additive leaves the current oxygenate requirements intact, ethanol demand should increase dramatically.

There are some concerns whether oxygenate requirements will remain intact, however. California is one state that wants a waiver from the fuel oxygenate requirement.

Source: www.fb.org/views/focus/

Porking out au naturel

A study completed by the University of Minnesota Swine Center shows strong growth in consumer demand for organic and natural pork products. This growth should support premiums for natural pork products over conventional, providing a good niche market for small and independent hog producers.

Source: W. Parker Wheatley, (612) 669-0331, whea0025@umn.edu

Dry but sweet

ARS researchers are developing a sweet potato variety specifically for making chips and fries. Sweet potatoes are highly nutritious; one medium-sized orange or dark yellow sweet potato provides more than the recommended dietary allowance of vitamin A and high levels of fiber, vitamin C and folic acid. The new sweet potatoes aren't as sweet as traditional ones and have high dry matter content—as much as 40 percent — so they don't soak up as much oil.

Source: Janice Bohac, USDA-ARS U.S. Vegetable Laboratory, (843) 556-0840, jbohac@awod.com

Fruity films

ARS researchers have developed edible films from pureed produce such as apples, oranges, carrots and strawberries. The thin, opaque films can be applied to everything from sliced apples to meat. The films control browning and prevent moisture loss better than several other coating types. The films could also provide new flavor combos, such as strawberry film on cut bananas or apple glaze on pork.

Sheets containing pureed fruit have long been available as snack foods. But this is the first time thin sheets of up to 100 percent fruit or vegetable material have been tested to enhance storage and flavor.

Source: USDA-ARS Quarterly Report, October 1-December 31, 2000.

Bill could build energy bridge

Biomass crops for energy — many grown on marginal land — will become more important in a world with already ample resources for producing food, says University of Minnesota economist Jerry Fruin. The farm bill should encourage market development and utilization of byproduct crop residues such as cornstalks, wheat straw and sawdust for energy, he says. In the longer term, biomass for energy will be the transition stage bridging the fossil fuel era with direct energy from the sun. Fuel cells or solar cells already are economical in some situations, he notes.

Source: Jerry Fruin, University of Minnesota, (612) 625-8720.

Speaking of direct marketing ...

Here are several resources on direct marketing to check out. "The Direct Marketing Resource Notebook" by the Nebraska Sustainable Agriculture Society includes case studies of various direct marketing enterprises, Midwest state and federal marketing contracts and an extensive list of resources. To order, call (404) 254-2289.

Another book, published by the Minnesota Institute for Sustainable Agriculture, is

"Collaborative Marketing, A Roadmap and Resource Guide for Farmers." It is available by calling (612) 625-8235.

A book offering tips about legal issues related to direct-marketing farm products is Neil Hamilton's "The Legal Guide for Direct Farm Marketing." It is available for purchase from the Agricultural Law Center at Drake University in Des Moines, Iowa at (515) 271-2947.

Source: Maribel Fernandez, University of Minnesota, (763) 682-7394, maribell@umn.edu

Healing pigs

Doctors are using a revolutionary material derived from pigs' intestines to heal sores and wounds, repair internal organs, treat urinary incontinence in women, and save the limbs of people suffering from deep wounds. It comes from tissue layers called small-intestine submucosa in pigs' intestines and prompts the body to replace damaged tissues and heal wounds quickly.

Source: The Furrow, Spring 2001.



ILLUSTRATIONS © UNCLE HYGGIN

Nebraska antes up for value-added ag

The Nebraska Agriculture Opportunities and Value-Added Partnership Act, approved last spring, offers \$1 million each year through 2003 to producers engaged in value-added enterprises.

Source: Call 1-800-422-6692, or visit www.agr.state.ne.us

Soy's a burnin'

Purdue University's first place winners in the seventh annual New Uses for Soybeans Student Contest won with a home heating fuel that uses 20 percent soy oil. The heating oil burns cleaner and is 10 percent cheaper than regular fuel oil, and can be used without making any changes to existing heating systems. The second place team created Soyastic, a plastic made with soybeans.

At the University of Illinois, students won the SoyLutions '01 contest with a new product called the "Soy Muf-fun," a ready-to-bake muffin enriched with soy protein. Other prize-winning ideas from the University of Illinois included "Soy Enhanced Pork Kabobs" and "Soy Suds, America's Cool Bean Beer."

Source: Bernie Tao, Purdue University, (765) 494-1183, tao@purdue.edu and Theresa Miller, Illinois Soybean Association, (309) 663-7692, millert@ilssoy.org

Ag Web Sites

BY JENNIFER PENA

The list of Minnesota-based ag organizations is extensive, but there are a few below you may not have heard about. Some Minnesota ag-related businesses are also highlighted. Remember, click by the AURI Web site at www.auri.org and see what we've been up to.

Minnesota Foundation for Responsible Animal Care

www.mnfrac.org

MnFRAC respects animal welfare and was founded to be the "voice of reason" for animal welfare issues. The site keeps up to date on the latest news and events concerning humane treatment for animals. MnFRAC's site describes its three major activities: humane animal care, environmental stewardship, and a safe, wholesome food supply. MnFRAC also has great links page full of useful resources.

Minnesota Crop Improvement Association

www.mncia.org

MCIA, Minnesota's official seed-certifying agency, is one of the oldest ag organizations in the state. Originally founded in 1903 during the Minnesota State Fair, MCIA worked to improve crop varieties. It focuses today on improving members' productivity, profitability and competitiveness. It provides a range of services including parent-seed production, identity-preserved program design and field inspection services.

Red River Valley Potato Growers Association

www.rrvpotatoes.org

Did you know potatoes are the world's fourth food staple, after wheat, corn and rice? And that during the 18th century, they were often served as a dessert? Just a bit of trivia to be found on Red River Valley Potato Growers "Fun Stuff" page, along with upcoming events and a message board.

RRVPG first organized in 1946 when a handful of growers felt the Valley's industry needed unification. Membership has now reached over 500 growers, united to "promote profitability and unity of the potato growers of the adjoining states of Minnesota and North Dakota through the development and promotion of quality potatoes." RRVPGA works on potato growers behalf in such areas as legislation, research, marketing, communication and merchandising.

Sugarbeet Research and Education Board of Minnesota and North Dakota

www.sbreb.org

With enough information to keep a visitor busy for days, the Sugarbeet Research and Education Board site is for anyone interested in sugarbeets. The growers of American Crystal Sugar Company, Minn-Dak Farmers



Cooperative and the Southern Minnesota Beet Sugar Cooperative formed SBREB to promote research, education and sugar production throughout Minnesota and North Dakota. The organization's Web site includes full-year research reports dating back to 1970, a 2001 production guide, a current events calendar and a searchable journals database.

Farm Shows USA

www.farmshowusa.com

This site by Midwest Shows, Inc. of Austin, Minn. provides lists of farm trade shows, exhibit space requests, renewal, move in and set up information, host hotel information, floor plans and more. Click for a map of locations, media downloads and scholarship information — all you need to know about what's going on in the tradeshow world.

Minnesota Management Education Programs

www.mngt.org

Sponsored by the Minnesota State Colleges and Universities, or MnSCU, this site features sections for each of its education programs, including farm business management, small business management, computerizing small business, lamb/wool and specialty crops. It also includes benchmarking information from over 2,400 Minnesota farms. As the site grows, keep checking for more statewide reports and links.

The Herb Man

www.herb-man.com

Just for fun, try out The Herb Man site, a Farmington, Minn. company that grows hard-to-find medicinal or uncommon herbs. Though the site is limited as of yet, the company has posted an online catalog of hanging plants, herbs and exotics, potted and house plants, and more. In person, you can visit The Herb Man at the St. Paul Farmer's Market this summer. (Look for the guy in that hat.)

Canamer International, Inc.

www.canamer.com

Winona-based industrial fabrics company Canamer International has been providing cover and lining systems for agricultural, recreational, industrial and environmental use since 1973. The company's covers and liners preserve the quality of seed grains that require customizing for specific needs. One covering system is an ecological storage solution for bulk commodities. Canamer's site includes detailed information on their products and services, an online shopping option, newsletters and more. ■

SNACKS JUST THE START

CHIPPIN' AWAY FROM PAGE 3

manufacturing business."

After spending a "significant sum of money to upgrade the facility" to pass federal inspections, Massoud began operating Clara Foods, Inc. last September. Along with Kay's Naturals chips, Clara Foods produces pretzels, cereals and other grain-based products under private label for food companies.

The plant can produce about 7 million pounds of pretzels per year and 6 million pounds of cereals and snack chips, which will increase to 17 to 18 million pounds per year if expansion plans are completed.

The rural setting hasn't caused a problem with distribution, Massoud says. "We're right on a rail line and major trucking lines on Highway 23 and 7. This is a real salt of the earth kind of place. The community is stable and supportive with a strong labor force that takes ownership in the manufacturing facility."

Knack for snacks

Kay's Naturals protein chips have been on store shelves since January. They were first sold in small Twin Cities health food stores, then a major Minneapolis distributor, Gourmet Award, picked them up and distributed to Byerly's and Lunds.

A natural foods broker in Chicago and a major broker on the West Coast are finding retail outlets around the country, including a nationwide chain of Bally Fitness Centers. Food distributors such as Tree of Life in Texas and BOSS of Pennsylvania have picked up the snacks, and Ann expects the chips to be in HEB Food Stores in south Texas this summer.

"We're at a point where our growth could be explosive," Ann says, "but we're being careful not to move so fast that we can't keep up with it financially."



After a pretzel manufacturing plant in Clara City, Minn. went bankrupt, the building's owner Tom Condon (far right) convinced Massoud Kazemzadeh (second from left) to renovate the plant and start a new company. Clara Foods manufactures snack and cereal products for an array of companies including Kay's Naturals, owned by Massoud's wife, Ann. Pictured with them are Tom Nelson (far left) of Condon, Inc. and Joe Jeanotte, Clara Foods production manager.

Ann has led the marketing efforts, keeping a focus on natural, organic and sports nutrition markets and listening closely to sales staff feedback. "If we hear a trend, we respond." Ann has discovered she has a knack for sales but insists there is a caveat: "Marketing savvy could just about kill you," because the possibilities are infinite.

Nancy Larson, AURI program specialist in Marshall, says AURI is assisting with packaging and advertising design and providing technical assistance in product development.

The company is continuing to design new products including high-protein salad and pizza toppings, stick cookies, cereal and pillow-like snacks filled with creamy flavorings. Tom Nelson, a Condon manager, says they are also considering the vending machine markets, "but we don't know if we're premature. ... A consumer is prepared to pay more for organics in the grocery store, but are they ready to do the same at the vending machine?"

Ann is cautiously optimistic about the company's success: "We have been fortunate in that we have had excellent advice from bright people who have protected us from making serious mistakes," including "people who hold no stake in the company."

Ann also credits "a terrific board... and a very talented set of investors" from around the country who bring experience in business start-ups, financial strategies and nutrition. "You just have to find the right people so you get the best advice ... Nobody can do this alone."

"There's always a struggle, but we've learned so much — from manufacturing to marketing."

Although Ann's time is consumed by her start-up company right now, she hasn't given up on her law career. In fact, she'll be wiser when she returns to her practice representing small and medium-size companies, she says. "I will know what they are facing on the other side."



Scooping up

New patent helps Detroit Lakes company scratch deeper into the cat litter market

BY DAN LEMKE

Detroit Lakes, Minn. — “Gotta be patient,” Mike Hughes murmured to himself while technicians, construction workers and AURI staff put the fine-tuning touches to the massive metal machinery in his plant.

As president of Pet Care Systems, Inc., a manufacturer of wheat-based cat and small animal litters, Hughes was understandably anxious. The new machinery was producing the first commercial batches of a redesigned litter product — enough to reach more than half the country’s Target stores by mid-May.

All it’s cracked up to be

The new crumbled litter has a more coarse texture than Pet Care Systems’ original ground wheat litter, “Swheat Scoop,” introduced seven years ago. It also tracks less, absorbs one third more moisture and clumps more quickly. The new generation Swheat Scoop is also the only alternative litter recommended for use in Litter Maid brand automatic litter boxes.

“There are some competing products out there, but we thought we could do better,” Hughes says. “So we checked with Jack (Johnson) and Al (Doering) at AURI to see what we could do.”

Developed and analyzed in AURI’s waste utilization lab in Waseca, the patented litter has been tested with overwhelmingly positive results.

Fractured wheat starch causes the litter to clump quickly, and a protein enzyme present in wheat controls the ammonia odor. Although the product looks like clay litter, it can be scooped and even flushed into sewer or septic systems.

“They took a good product and made it into a premium product,” says Al Doering, AURI technical services specialist. “This product will compete with clay litters on the market but has the advantage of being safe for sewer and septic systems and is nearly dust-free.”

Deeper into retail

Having litter sold in Target is a major development for Pet Care Systems. Already in about 7,000 pet stores such as PetSmart and Petco, the addition of 500 Target retail outlets is an important development. Hughes says five percent of cat litter is purchased in pet stores, while mass merchandisers like Target sell 41 percent. The wheat litter is also available in 10 Wal-Mart stores in Minnesota and North Dakota.

The success of Pet Care Systems’ wheat-based litters is good news for area farmers as well. Hughes says his company buys 95 percent of the wheat used in production from northwestern Minnesota farmers.

Patience, it seems, pays off. “We know this new litter will sell better,” Hughes says. “Even our competitors are telling us we have a winner.” ■