



# AG INNOVATION NEWS

The newspaper of the Agricultural Utilization Research Institute

OCT.-DEC. 2002  
VOL. 11, NO. 4

## INSIDE:

### SUNNY DELIGHT

page 9



### The Btu busters

page 16



### SOUP GODDESS

page 3



### How AURI works

FINAL PART OF  
OUR SERIES  
page 4



PHOTO BY ROLF HAGBERG

## From farm gate to kitchen door

page 6

## Staying fresh

BY EDGAR OLSON  
EXECUTIVE DIRECTOR

A poster caught my eye the other day. It was a picture of a large piece of moldy bread. The poster's caption admonished the reader to "Stay fresh, or be fed to ducks." A unique approach, but a worthwhile message nonetheless.

In any industry, competition necessitates staying abreast of current technologies and business practices. At AURI, we try to go one better. Our staff endeavors to provide top-quality service while keeping an eye on the future.

The AURI staff has years of experience in industry, business, higher education, and research. The expertise and connections gained from years of working in ag-related fields, combined with an intimate knowledge of many key industries, represent a wealth of resources for our clients.

But the search for knowledge does not end there. To be a leader means not only grasping the current status of an industry but also foreseeing emerging opportunities. Those opportunities are what drive AURI.

AURI undertakes initiatives to examine potential markets for ag commodities. In our recent past, initiatives have examined the promise ag commodities and coproducts hold for fuels and biobased products such as plastics (see related stories on pages 4 and 16). We have also looked into emerging markets for meat products resulting from Minnesota's changing ethnic population (see story on the lamb industry, page 12). Those are just two of dozens of initiatives we have undertaken.

We also use market information to pinpoint opportunities. Staff members attend conferences, meet with collaborators, do research and take classes in an effort to stay current. We do all that we can to identify new markets for Minnesota-grown goods.

While it is a never-ending search, we are having an impact. In the past year alone, AURI has worked on projects that have involved more than 30 Minnesota-grown products.

Including duck.



OLSON.

## AURI at FarmFest 2002 and the Minnesota State Fair



AURI showcased innovative Minnesota products at FarmFest 2002 near Redwood Falls on August 6-8, then at the Minnesota State Fair, August 22 through Labor Day. **Above:** Fairgoers checked out new value-added products at AURI's exhibit in the Agri-Land building on Machinery Hill. **Below:** Farmfest visitors at AURI's tent were treated to free food samples, including Prairie Smoke Barbecue Sauce produced by BOLT Enterprises of Westbrook-Walnut Grove High School. Twelve AURI clients displayed their products and services at the three-day farm show.



**Above top:** The Minnesota Corn Growers Association's Farmfest display featured a Ford pickup that is being used to test E-B Diesel, a blend of ethanol, biodiesel and petroleum diesel fuel. Representing organizations that support E-B diesel research, from the left, are Michael Sparby of AURI, and Yvonne Simon and Gene Fynboh of the Corn Growers Association.

**Above bottom:** AURI intern Kara Ferguson guided a young participant through the "State Fair Millionaire" game at AURI's Agri-Land exhibit. The quiz tested kids and adults on Minnesota agriculture.

### 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](http://www.auri.org)



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](mailto:dlemke@auri.org)

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.



AURI programs are available to legally-organized businesses or cooperatives with projects that have the potential to create new uses or new markets for Minnesota agricultural commodities. AURI assistance is designed for the early stages of a product's life cycle, while an element of feasibility is yet to be determined. Project proposals are evaluated on the following criteria:

- Innovation/uniqueness
- Market viability
- Use of Minnesota commodities
- Number of farmer-producers impacted
- Amount of value added from further processing
- Economic impact
- Cost savings

Programs are designed to assist with:

- Identifying emerging value-added opportunities
- Developing innovative commodity-based products
- Developing production processes for feasible products
- Promoting products developed with AURI technical assistance
- Providing resources to bring new products and processes to the marketplace

Assistance may include:

- Access to AURI's scientific and business staff
- Access to laboratory and pilot plant facilities
- Product development and feasibility testing
- Process evaluation and improvement
- Technology transfer and applied research
- Business needs evaluation
- Links to available resources
- Potential for grant funds to qualifying applicants

AURI provides resources proportionate to the project's impact. Smaller-impact projects may be eligible for technical assistance only, while projects with industry-wide impact may be eligible for financial assistance.

#### AURI Facilities

AURI operates several laboratories:

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

#### AURI Field Offices

**Southeast Office**  
Lisa Gjersvik  
P.O. Box 251  
Waseca, MN 56093  
(507) 835-8990

**Northern Office**  
Michael Sparby  
P.O. Box 599  
Crookston, MN 56716  
1-800-279-5010

**Central Office**  
Michael Sparby  
P.O. Box 188  
Morris, MN 56267  
(320) 589-7280

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

For e-mail addresses, visit AURI on the Web: [www.auri.org](http://www.auri.org)

# SOUP GODDESSES

*makes veggie brews for the coffee shop trade*



BY GREG BOOTH

*Hopkins, Minn.* — Minding her soups one day at the Pekoe and Java coffee shop, Beth-Alison Bataille heard a customer jokingly refer to her as the “soup Nazi.”

“It may have been funny on Seinfeld,” but not to Bataille, of German heritage.

She preferred ‘Soup Goddess,’ now the brand name of her frozen, ready-to-eat vegetarian soups being distributed to coffee shops, delis and food services across the Midwest.

Soup Goddess comes in African peanut, ginger carrot, cream of lentil, sweet potato curry, Moscow mushroom and Tuscan multi-bean flavors. All six varieties include Minnesota ingredients, Bataille says, and are all-natural. She is negotiating with an organic farmer for custom-grown herbs to flavor the soups.

Bataille first noticed the demand for her soups when she served as treasurer of the Minnesota Coffee Shop Association. Other shop owners wanted ready-to-eat vegetarian soups like Bataille was serving, but they were not easy to find.

“I started finding out what it would take to produce them,” she says. “I made a thousand phone calls” investigating ingredient sources, package sizes and much more.

Then Bataille began working with Charan Wadhawan, AURI food scientist in Crookston, to scale up her recipes. There was a hitch: the recipes had never been written down. Bataille started writing, and the large-scale results were surprisingly good, she says. Wadhawan also helped with nutrition labeling and taste testing.

Bataille was concerned that by “going to a large batch, we would reduce quality.” The soups have to be able to retain flavor and texture even when heated up and cooled down numerous times in a typical coffee-shop kitchen, she says.

Captain Ken’s in St. Paul produces and packages the soups. The first production run was in July 2001 — not a great soup sales month, but demand was adequate and

Bataille received “very pleasant reactions.” A River Falls, Wis. deli owner reported that the 5-pound portions were just right — no leftovers as with more commonly available 8-pound packages.

Customers like the exotic flavors, and the soups are cost-effective for small shops, Bataille says. She targets coffee houses, cafes

and delis because they often do not want to produce their own soup, or they want soup available on weekends when the chef or owner may be away.

Soup Goddess sales now range from \$1,000 to \$1,500 per month, and Bataille is looking for more customers and distributors. Her brand identity, fashioned by Natoli Design Company,

could eventually help launch Soup Goddess into retail sales. She is also cooking more flavors to add to the line, which is distributed by Roots and Fruits and Instant Whip in the Twin Cities. ■



PHOTOS BY ROLF HAGBERG

Beth-Alison Bataille’s customers call her the “Soup Goddess” for her exotic-flavored soups such as African peanut and sweet potato curry served at her Hopkins, Minn. coffee shop. The nickname is now a brand of frozen, packaged soups (shown above) that Bataille markets to coffee shops and food services across the Midwest.

# An eye on biofutures

## How AURI Works part IV



*Editor's note: This is the final installment in a series exploring AURI's structure and services. Previous segments covered AURI's mission, programs, and business and technical services. We now explore AURI's forward-looking efforts to identify opportunities in value-added agriculture.*

BY CINDY GREEN

Since World War II, cheap petroleum has fueled our economy. Not only does oil run our transportation system, it is in plastics, fabrics, lubricants, flooring, even cosmetics.

But change is coming, says Keith Sannes, AURI deputy director in Crookston. "People are saying, we want to have these things derived from renewable resources. Petroleum is known to be a limited resource and harmful to the environment."

Replacing petroleum with ag-based products is a major AURI focus for the years to come, Sannes says. Besides responding to value-added product ventures, the Institute is looking at long-term opportunities spurred by global economic, environmental and political change.

### Market USA

"Since September 11, there has been a renewed (American) interest in self-reliance and economic security," says Lisa Gjersvik, AURI project director in Waseca. "We want to be in control of our own destiny. I think there is opportunity there."

Gjersvik is completing a review of government studies, work funded by commodity group checkoff dollars, and research conducted by national laboratories. So far, "the three top opportunities emerging in agriculture appear to be bioenergy, bio-based products and medicinal foods or nutraceuticals."

AURI is already doing substantial work in the bioenergy area. For example, AURI's fats and oils laboratory in Marshall is a leader in biodiesel research, and the coproducts lab in Waseca is analyzing and pelletizing ag residues for fuel (see story, page 16). AURI has also delved into nutraceutical development, such as fractionating soy lecithins to make high-value supplements.

On the national level, Gjersvik says, significant biofuels research is being conducted at the National Renewable Energy Laboratory in Golden, Colo., as well as at

federal agencies such as the U.S. Department of Energy and its Office of Industrial Technology, and USDA's Agricultural Research Service. "AURI tries to keep abreast of these new technologies for possible opportunities for Minnesota," Gjersvik says.

But can ag products compete with petro-products in the marketplace? "Sure," Sannes says. "That will be taken care of in the future — as petroleum becomes more scarce, prices will go up and ag materials will be competitive."

"We in this country and the world have spent billions of research dollars and huge amounts of people's time working on petroleum products; we haven't yet done that with ag materials."

Developing ag-based substitutes "will happen over decades of time," Sannes concedes. "It will take a lot of hard work and money." But by the time the economics catch up, "we will have a lot of the work done."

### Whatever happened to starch?

Bioproducts have not received much notice in the past decade. Inventions such as starch plastic bags received plenty of attention in the mid-1980s, but never caught on in the marketplace.

Now that's turning around, Sannes says. "I see a rekindled interest in using ag materials to replace plastic fibers in building materials, polyesters, anything like that," says Sannes, who worked on starch polymers during his organic chemistry studies at the University of Iowa, post-doctoral studies at the University of Michigan, and later at General Electric's research lab in Schenectady, N.Y.



PHOTOS BY ROLF HAGBERG

AURI Deputy Director Keith Sannes, a polymer chemist, is seeing renewed interest in starch-based plastics and other bioproducts. In the coming decades, "as petroleum becomes more scarce, prices will go up and ag materials will be competitive," Sannes says.

"Most chemicals (polymerized into plastic) currently made from petroleum can also be made from starch. We just don't have all the routes down yet, and we haven't had the research money."

In 1989, soon after joining AURI, Sannes formed a coalition to work on corn-starch polymers with researchers from Mankato State University and the Argonne Laboratory near Chicago, Ill.

Several entrepreneurial companies have used the technology to make starch-based plastic. The first and most successful has been a Cargill-Dow partnership that is making renewable products at a Nebraska plant (see "Elsewhere in ag innovation," page 13).

One entrepreneurial company assisted by AURI has invented a cheaper method of making polymers. Rather than first turning starch into a chemical, which requires an

expensive purification process, the company takes ag residue — chopped-up stalks and stems — and adds chemicals that "chew up small pieces so it becomes liquid," Sannes says. "Then they add a chemical to bring the solids out of the solution in the form you want — whether it's a 2 by 4 or gas cap or carburetor."

This is "not pie in the sky," Sannes says. "As we get into this, it will be an ongoing evolution — we will get better at making starch into just about anything."

### Ag revolution, second wave

The evolution started, but was halted, over a century ago. Before the Civil War, ethanol was a leading industrial solvent and was later used to make rubber for World War II military crafts. In 1941, Henry Ford built a car of



Lisa Gjersvik, AURI project director in Waseca, says her reviews of government, commodity-group and privately-funded research is showing that "the three top opportunities emerging in agriculture appear to be bioenergy, bio-based products and medicinal foods."

soybean and vegetable plastics and filled the tank with corn ethanol. The tires were made from goldenrod grown by Thomas Edison. After World War II, however, commodities found better markets in exports and oil prices plunged, setting the stage for an economy driven by fossil fuels.

Recent initiatives could put us back on the route to a renewable-resource economy, Gjersvik says. In the late 1990s, representatives of the agricultural, forestry and chemical industries, including AURI's Max Norris, wrote a visionary plan initiated by the National Corn Growers Association: "Plant/crop-based Renewable Resources 2020." It calls for replacing 10 percent of fossil fuel-based materials with plant-based materials by 2020 and increasing that ratio to 50 percent by 2050.

Two federal actions — President Clinton's 1999 Executive Order 13134, "Developing and Promoting Biobased Products and Bionergy," and the Biomass Research and Development Act of 2000 — have accelerated federal research and development in these areas.

"It's AURI's intention to be a leader in this field," Gjersvik says. "Wherever possible, we want the processing to be done in this state, preferably by producer groups." But ultimately those taking advantage of this new economy "will be those willing to step up to the plate." ■



AURI's Keith Sannes says he sees a "rekindled interest in using ag materials to replace plastic fibers in building materials, polyesters, anything like that."

# Darn good meat



Posing under the arc of an evening shower's rainbow, Ralph Kaehler, a fourth-generation cattleman, his wife Filomena and sons Seth (at left) and Cliff want to preserve their rural lifestyle by tapping directly into the consumer market.

## From farm gate to kitchen door, southern Minnesota cattle producers are controlling meat production and giving consumers what they want.

BY E. M. MORRISON

*St. Charles, Minn.* — Winona County cattle producers Ralph and Filomena Kaehler are a bit "touchy" about their identity-preserved beef business.

"Our customers can reach out and touch the people who produce their food," Ralph says. "They can shake hands with the breeder, the feeder, the processor and the delivery person."

Kaehler and his partners have integrated their business to control every step of meat production and distribution — from genetics and breeding to feeding, processing and delivery. They are among a small but growing number of Minnesota farmers who market straight to consumers to get more for their products.

### Worldwide repute

Ralph Kaehler, 41, is a fourth-generation cattleman. He lives on his family's century farm near St. Charles in southeastern Minnesota, country that is "as close to God as you can get without being in heaven."

Since 1918, Kaehlers' Homedale Farms has produced registered Shorthorn cattle, building an international reputation for Shorthorn, Angus and Simmental genetics. Kaehler and his two brothers sell about 100 bulls per season, plus semen, bred heifers and show calves.

The cattle are raised in Cannon Falls, Minn., in a 500-head feedlot owned and managed by partner Dave Kimmes. The third partner, Dave Lindevig of River Falls, Wis., provides nutritional and marketing oversight for the

group, which finishes cattle for local cow-calf producers who use Kaehler Farms seedstock.

"We feed a totally balanced ration of forage and grain — no animal byproducts," Lindevig says. To further differentiate their cattle in the marketplace, they do not use growth hormone implants in the finishing phase.

By controlling genetics, nutrition, feeding and handling, the group produces superior beef that is tender and well marbled, Kaehler says. "People rave about our quality. But (by) selling in the commodity markets, we weren't getting the benefit of that."

So in 2001, Kaehler, Lindevig and Kimmes formed a direct-marketing company, KimVig, Inc., to take their beef straight to consumers. "We're trying to capture the increased animal

value at the retail level," roughly 40 percent over wholesale, Kaehler says.

### You-betcha beef

Geneva Meats, a federally inspected slaughter plant in Geneva, Minn., processes KimVig beef, which is naturally aged for 12 to 14 days and handled separately to preserve its identity.

To cement KimVig's identity, the group chose a folksy, Minnesota-modest brand. "We thought, let's just call it what it is: Darn Good Meat," Lindevig says. He says their first customer was even more emphatic: "I looked at the check and it was made out to 'Damn Good Meat.'"

KimVig's first direct sales were made through a River Falls youth hockey club, which earned

PHOTOS BY ROLF HAGBERG



From left, cattle producers David Lindevig, Ralph Kaehler and Dave Kimmes, formed KimVig, Inc. to market their beef under the label "Darn Good Meat."



Beskau's Home Delivery of Hastings, Minn. is now distributing KimVig beef as well as milk to 300 homes and daycares. Pictured is David Beskau, who runs the service with two brothers, and his wife, Jean.

about \$1,000 in donations for the meat, and KimVig gained two dozen regular customers. Sales picked up in the summer of 2001 when KimVig partnered with Beskau Home Delivery of Hastings.

### The milkman cometh

The Beskau family has been trucking since 1957. Their main service is hauling raw milk, but dairy industry consolidation could shut them out of that market within 10 years, says Mark Beskau, 39, who runs the company with his two brothers.

To diversify, the Beskaus began home milk delivery last year. Popular 50 years ago, home delivery "is making a comeback," Beskau says. "People are busier now, and they like the convenience." The business runs one milk truck full-time and another part-time, serving 300 homes and daycares in Hastings, a community of 18,000 southeast of St. Paul.

"The Beskaus were interested in putting meat on their trucks," Kaehler says, "and we were looking for a way to reach more homes. They have the same values and goals as we do — it's the perfect fit."

The delivery arrangement benefits both companies. KimVig stocks the trucks with beef, allowing Beskau to expand product offerings without bearing inventory costs. Beskau, in turn, makes weekly sales calls for KimVig and fills orders.

### Beef promo on a budget

Sales of home-delivered meat are running about \$2,000 a month, Beskau says. "It's a very good product. People who try it like it. We're having trouble getting enough people to try it, though."

Like most new food companies, KimVig has limited funds for advertising and free samples. "That's one of our biggest marketing challenges," says Lindevig, 42, marketing

director of American AGCO, a farm services company.

AURI helped KimVig design a coupon promotion to encourage people to try their brand. The Institute also assisted with labeling requirements and KimVig's marketing plan. The group has been working with AURI's Dennis Timmerman, who has been an especially good sounding board for ideas, Kaehler and Lindevig say.

### Touching the farm

In its first year, KimVig sold 60 head of beef directly to consumers. Eventually, the company hopes to market all its finished animals this way.

The Minnesota Department of Agriculture estimates that at least 29,000 head of beef

were sold directly to Minnesota consumers in 2000, up 25 percent from 1994. That is less than 4 percent of slaughtered cattle. Still, says Paul Hugunin, an MDA marketing specialist, "Over the last 10 years, we've seen an increase in the number of animals sold directly to consumers."

Why buy directly from farmers? "The top two reasons we always hear from consumers are quality and taste," Hugunin says.

Beyond that, Kaehler adds, consumers are looking for assurance on how their food is produced. "We offer our customers not only an exceptional eating experience but an environmental and emotional connection to agriculture. That's why our slogan is 'Darn good meat from darn good people.'" ■

## AURI at work

### Services AURI provided KimVig include:

- Labeling
- Promotions
- Referrals for exporting
- Marketing assessments



## BULLS IN China



### KimVig peddles its meat to Yunnan Province

BY E. M. MORRISON

China is a one-billion-person market, and KimVig wants a piece of it. With AURI's help, the marketing company is pursuing beef exports to China, where Kaehlers' Homedale Farms has already established business contacts.

Six years ago, the Kaehler family introduced Shorthorn cattle to Yunnan Province in south central China. Chinese officials bought 40 bulls and 110 bred cows from Kaehler and 20 other Midwest producers. While the deal was being put together, the Kaehlers hosted two trade delegations at their St. Charles farm. "They looked at our cattle and they liked our approach," Ralph Kaehler says.

The Shorthorns went to China in the fall of 1996. The next summer, Ralph followed to check on the cattle and renew contacts with Chinese agriculture officials.

Last year, Ralph's wife, Filomena, and son Cliff were part of a Minnesota Trade Office exhibition at the Food and Hotel Show in Shanghai. And this June, Ralph revisited China with Gov. Jesse Ventura. "There's a lot of interest in our beef — both our genetics and our meat."

As China becomes more prosperous, demand for beef will likely surge, providing a huge potential market for Minnesota cattle producers, Kaehler predicts. But that is in the future. "This is definitely a long-term effort." ■

# ANIMAL POWERHOUSE

## What happens to rural Minnesota if the livestock processing industry declines? A new AURI study describes the economic magnitude of meat and dairy processing.

BY E. M. MORRISON

When the Dairy Farmers of America closed a cheese plant in Fergus Falls last year, the town lost a \$44 million business and more than 100 skilled jobs.

Yet the economic aftermath went far beyond that: 350 dairy farmers in 10 counties were forced to ship milk elsewhere; independent milk haulers had to upgrade trucks to serve a more distant dairy plant; the local power company lost a major customer; banking, wholesale trade and construction businesses all felt the closing.

The region's total loss? More than \$100 million a year, says Su Ye, an economist at the Minnesota Department of Agriculture. "It's not just the plant and the jobs at the plant, that are lost. It's much, much more."

In a recent study of the state's livestock processing, co-funded by AURI and MDA, Ye outlines the total economic activity generated by six Minnesota meat and dairy companies. Her study also estimates economic gains and losses from potential changes in plant output — offering a close look at what Minnesota stands to lose if the livestock processing industry shrinks.

### Turkeys galore

Animals power rural Minnesota, says Michael Sparby, AURI project director in Morris. Minnesota is the top turkey-producing state for the second year in a row and ranks third in hogs, fifth in milk, seventh in red meat production, ninth in eggs and 10th in chickens.

Livestock accounts for more than half of annual farm revenues — \$3.9 billion in 2000, according to the Minnesota Department of Agriculture. Livestock processing plants yield another \$6.7 billion in annual sales.

But cash receipts from livestock farms and processing plants account for less than half of the industry's total economic contribution to Minnesota, Ye says.

Animals boost the value of Minnesota-grown grain, including the mounting supplies of distillers dried grains and soybean meal. Livestock farmers and processors purchase supplies, equipment and services in the community; they employ local workers who buy food, houses and entertainment; they pay taxes to run schools and plow streets.

When these economic "multipliers" are added

in, Minnesota livestock production and processing generate an estimated \$21 billion of commerce a year, Ye says. The industry provides some 51,000 farm and processing jobs, plus another 108,000 jobs dependent on the industry, the Ag Department estimates.

### Bring home the bacon

The AURI-MDA report, which uses industry data from 1997, 1998 and 1999, shows the powerful economic force of each processing plant, Sparby says. Take the Hormel Foods pork plant in Austin, for example.

The Austin plant reports annual sales of \$764 million. The operation buys \$264 million worth of hogs from 700 farmers in southern and central Minnesota. The plant's 2,900 workers earn an estimated \$77 million in wages.

And these sales and expenditures cause ripples of related business activity, the report says: \$242 million in manufacturing; \$51 million in banking, insurance and real estate; \$46 million in transportation, communications and utilities. The study estimates the total economic impact on the state at nearly \$2 billion a year.

Likewise, the Austin plant generates an estimated 5,600 jobs in businesses that support or supply the processing operation, including 2,000 jobs in agriculture, 900 in manufacturing and 400 in construction.

### Animal farms under fire

The AURI-MDA study comes at a controversial time in a rapidly-changing livestock industry, says report co-author Harold Stanislawski, an MDA dairy expert.

In 1999, the growth of large-scale feedlots prompted the Minnesota Legislature to order the first-ever "Generic Environmental Impact Statement on Animal Agriculture." Disputes over feedlot permits, public objections to odor, and fears about manure spills and water pollution have spurred local moratoriums on new livestock enterprises. Farmers who want to expand often find themselves at odds with neighbors, township and county boards, and zoning officials.



PHOTO BY ROLF HAGBERG

A new AURI-funded study of Minnesota's livestock processing industry, by the Minnesota Department of Agriculture, uses data from six meat and dairy companies to project Minnesota's economic gains and losses from changes in the livestock industry.

### Growing up together

There's a complex interplay between livestock production and processing, Sparby notes; each sector influences the vitality of the other. In California, for instance, big dairy farms and processing plants have grown up together, making California number one in milk production and number two in cheese.

In the turkey industry, where Minnesota leads the nation, most poultry farms are within 60 miles of a processing plant. Companies such as Jennie-O Foods, based in Willmar, have helped push up Minnesota turkey production 45 percent since 1990. What's the multiplier effect of this expansion?

Currently, Jennie-O Foods' six Minnesota turkey plants employ about 5,300 workers, producing annual sales of \$750 million and total economic activity of more than \$2 billion. Another 25 percent increase in sales would boost the economic impact of these plants by more than \$500 million a year, the report says. Employment would jump by 1,300 and Minnesota turkey production would rise by \$94 million.

### Steep closing costs

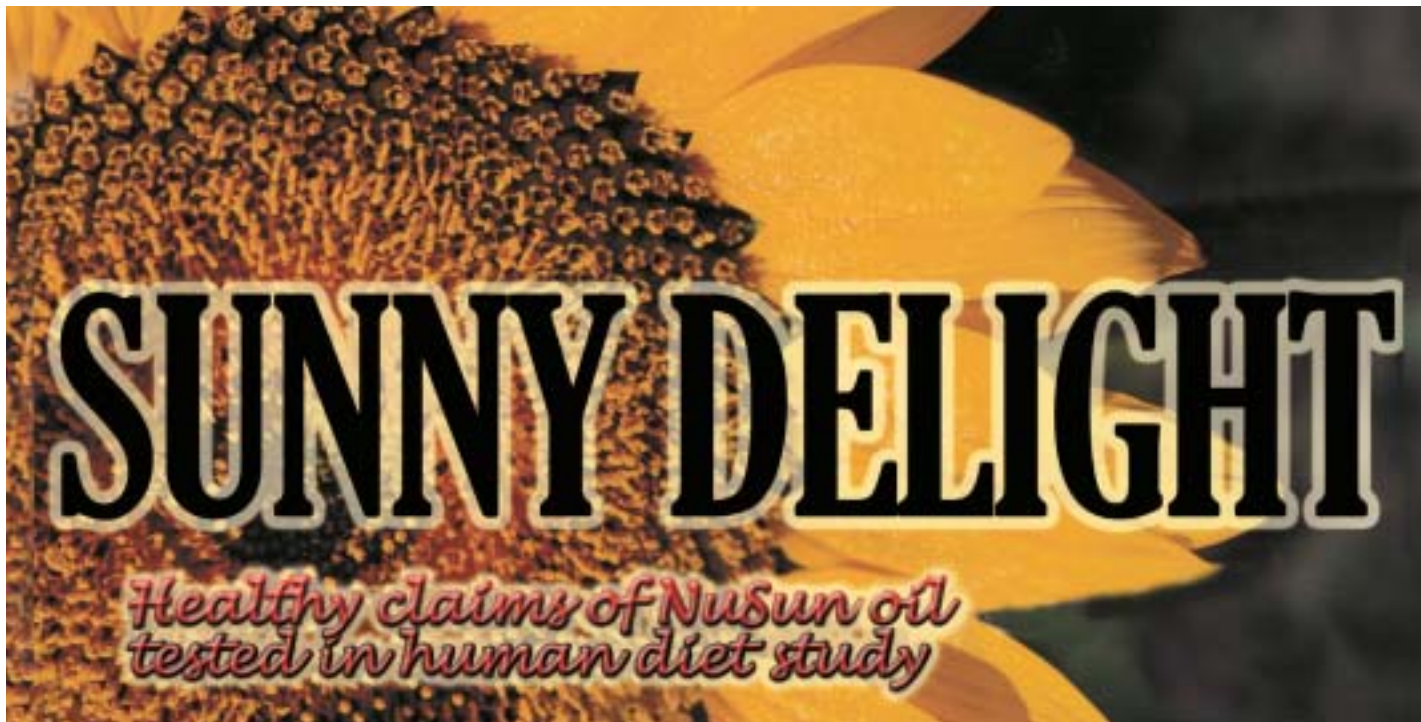
Locally, the Fergus Falls cheese plant illustrates the downside of that interplay. The plant closed just a year after Dairy Farmers of America invested \$1 million in the 1970s-era facility, says Stanislawski, who lives in the community and used to take visitors to the cheese plant whenever he wanted to show off "the might of Otter Tail County."

A contributing factor to the closing was an insufficient local milk supply, says Todd Johnson, who owns a 60-cow dairy farm near Fergus Falls. "There wasn't enough milk to run the plant at 100-percent capacity," Johnson now ships his milk to Melrose, 75 miles southeast.

As the state strives to fashion wise animal agriculture policies, Stanislawski hopes the AURI-MDA study will clarify the economic stakes for rural Minnesota: "People don't understand the magnitude of the opportunity to grow this industry, or the magnitude of the crisis if it declines," he says. "There's no replacement for this kind of commerce in rural areas."

The new report, "Economic Impact of Selected Livestock Processing Plants in Minnesota," is available at [www.auri.org](http://www.auri.org) ■





PHOTOS BY ROLF HAGBERG

BY DAN LEMKE

*Bismarck, N. D.* — Shoulder-high, vivid golden heads arching toward the sun, sunflowers were once revered by the Aztecs as a symbol of the sun itself. Nowadays, it's not the sunny hue that conjures up visions of gold for producers — it's the oil.

About 40,000 acres of oil sunflowers were planted in Minnesota this year. Nearly half were planted to "NuSun" varieties, which yield a light, amber oil that could be the next heavy hitter for the sunflower industry.

"We want to show that NuSun™ oil is comparable to and as healthful as olive oil," says Ruth Isak, communications director for the National Sunflower Association, based in Bismarck, N.D.

Low in saturated fat, NuSun is a monounsaturated oil containing linoleic acid, an essential fatty acid. Since it does not need hydrogenation to remain shelf-stable, it is free of trans fatty acids.

A human diet study, supported by AURI, is underway at Penn State University. That research is expected to support health claims made for NuSun, although final results will not be available until later this fall.

"We're looking at common markers like cholesterol, LDL, HDL — also oxidation levels," Isak says. "All of the subjects, even those not consuming NuSun, are eating healthy diets because we didn't want to slant

the results." The 32 participants will finish the diet portion of the study by the end of October.

The National Academies of Science's Institute of Medicine now warns that people should reduce their intake of trans fatty acids to protect against heart disease. An Institute panel says there is no safe level of trans fats in the diet. The FDA is expected to issue trans fat labeling regulations by this fall or early next spring. The National Sunflower Association expects the labeling to heighten both consumer and manufacturer interest in healthier oils.

Not everyone is waiting for the results of a diet study or FDA regulations before embracing NuSun. Its fat profile and cooking performance are already attractive to snack companies. Frito-Lay is test marketing seven snack items cooked in NuSun oil; Procter and Gamble uses NuSun in its Pringles and Torrenogs snacks. Barrel O' Fun and a variety of other companies use NuSun.

While demand is good, supply is tight, raising the price for NuSun oil. That is generally good, but too short a supply can limit access to additional markets. Isak says the NSA is hopeful more acres will be planted to NuSun to keep pace with expected demand and to help the oil reach new markets.

"The price has to be considered against the values you are getting," says Max Norris, AURI fats and oils scientist in Marshall. "One of the

biggest values for NuSun is that it's very low in trans fats. Other oils have to be hydrogenated, which adds trans fats and will have to be labeled as such. With NuSun you have a ready material with no trans-fats. That's a great selling point."

"If we can come through with a market that buys the oil for a consistent, fair price for the producer, that will help establish a consistent acre base," Isak says. The NSA is hopeful that farmers who have left sunflowers for other crops will reconsider. Several herbicide-resistant varieties, developed without biotechnology, will soon be available, which should make raising sunflowers as easy as raising soybeans.

"Certainly there is demand for this oil," Isak adds. "Because of that, we hope producers look hard at sunflowers as a planting choice ... there is room for more acres." ■



This year, nearly half of Minnesota's 40,000 sunflower acres were planted in NuSun varieties, which yield a monounsaturated oil that is free of trans fatty acids.

# WRAPPED UP FOR PROFIT

## WILDLIFE SCIENCES REDESIGNS ITS BIRDSEED CAKES TO GET A WING UP ON THE COMPETITION

Wildlife Sciences owners Bill Gleason and David Pichotta display birdseed cakes, sporting trim new packaging, that they expect to place in large retail chains across the country.



PHOTOS BY ROLF HAGBERG

BY CINDY GREEN

*Chaska, Minn.* — St. Alban's Bay beef tallow, millet and sunflower seed cakes may be for the birds. But the packages they are wrapped in are for the profits.

Bill Gleason and David Pichotta, owners of Wildlife Sciences in Chaska, anticipate that the trim, cost-saving packaging on their birdseed-suet cakes will beat the competition. This fall, the partners are scaling up production to bring their improved line of St. Alban's Bay "Suet Plus" wild birdfeed to retail chains throughout the United States.

### SIX YEARS IN

The venture started six years ago as a side business for Gleason, 40, and Pichotta, 47. Both are Twin Cities commodity traders who deal primarily in ag byproducts — animal and vegetable fats, feather and bone meal, seeds,

dairy whey and other ingredients for livestock feed, pet foods and industrial products. "With all the consolidation in agriculture, it's been getting tougher for small, independent agents." Mega-national companies "hire their own brokers. They don't need us," Pichotta says.

The pair began looking for ways to add value to the materials they traded, including beef tallow and seeds. Though at the time Gleason says he was only "moderately involved" in birdfeeding (he now has "feeders all over the yard"), he knew the market was growing rapidly.

The partners acquired equipment to make bird cakes at a Wisconsin contract packager. They used traditional methods for their suet cakes: mixing melted beef tallow and birdseed — "the consistency of ketchup with nuts" — and pumping it into plastic trays. A colorful label, laminated with a thin layer of foil so

beef fat didn't seep through, was heat-sealed on the clear blister-seal plastic tray — "similar to Matchbox Cars' packaging," Gleason says.

The cakes sold well in independent garden centers and specialty stores. "But if you look at the market, 75 percent of it is in the large box stores and home centers," Gleason says. "You can own the independents and still not have much market share. ... A couple years ago, we had to make a decision: do we want to bump this company up?"

### WORKING IN THE MARGINS

Pichotta and Gleason realized their products were too expensive for large retailers, which thrive on large volumes and thin margins. "We had more costs in the package — in cardboard and plastic — than in the ingredients. Everything else was minimized; we could only reduce on packaging."

Although Gleason had some packaging knowledge as a former General Mills buyer, "I was not a packaging expert." To investigate options, "we literally went to the grocery stores and grabbed anything that could hold a piece of suet."

Wildlife Science's banker told the entrepreneurs about AURI. "We sat down with Jack Johnson and Max Norris, looked at the various packages in front of us and told them what we thought could be marketable," Gleason says. "They narrowed it down to a couple of choices" that would work technically.

"They were asking all the right questions, so we knew they had a good chance of success," says Johnson, head of AURI's coproducts lab in Waseca. AURI helped Wildlife Sciences source custom-designed equipment for its new packaging and move existing equipment from Wisconsin to Chaska where the company

opened a processing plant a year ago.

### CAKE PACKS PEEL LIKE CANDY BARS

"We now use plastic roll film that replaces two (plastic) pieces and the cardboard. That reduces the cost by 20 percent," Gleason says. The pair stumbled onto other useful attributes of the new packaging. The label can be printed directly on the plastic rather than on a foil card, so information can be printed on the top, bottom and sides of the package. "We can print birding tips on back, and if our products get knocked over or piled on top of each other, there is still printing in view. Our competitors can't do that. We're the only ones with this type of packaging."

From a handling perspective, "suet beef fat is messy. Consumers don't like taking it out of the box; you get stuff in your fingernails or have to use gloves. With the roll film, these peel open like candy bars; there's no mess. And there's less waste — one wrapper to throw away."

Pouring slippery suet cakes into plastic roll film was a challenge, however. The creamy product "is easier to put in a tray. The engineering was much more difficult than we thought."

AURI chemist Rose Patzer helped formulate a firmer cake that could endure warm temperatures, and Johnson helped improve the packaging process.

### IN TIME FOR COOL WEATHER

The new-and-improved suet cakes, with an average retail price of one dollar each, are being introduced in retail chains, such as



STOCK PHOTO

Hardware Hank, in time for prime bird-feeding weather. "It's a seasonal business; people generally feed birds in colder weather when they need energy from the suet, or during migration times: fall and spring."

St. Alban's Bay birdseed cakes come in four varieties — peanut, sunflower, nut and berry, and wild bird blends — various mixtures of millet, cracked corn, sunflower seeds, peanuts and grain byproducts. All the tallow is from Minnesota and, except peanuts, the seeds and grain come from Minnesota and the Dakotas. "They are processing close to the commodities they're using — buying at the right price and selling into a high value-added market," Johnson says.

The company also sells green enamel cage feeders to hold the 4-inch square, 1-inch thick suet cakes. The original packaging still sells at independent retailers where the company has a loyal customer base. As production expands, "we may also private-label for some of the larger guys." Nationally, Gleason says, there are only five or six major birdseed producers. The biggest, in Iowa, controls 50 percent of the market.

The side venture is becoming a full-fledged business enterprise. "Our company takes more of our time; we have less time for trading," says Gleason, who is in charge of sales and administration. They still do some trading, says Pichotta, who handles purchasing and plant management. "It helps keep us in touch with the markets" — with prices and the availability of fats, seeds and nuts.

The entrepreneurs are tapping a national wild-birdseed market that exceeds \$2 billion in annual sales. Spending on wildlife watching has surpassed hunting, they say. "As baby boomers get older, they want to watch the birds in the backyard," Pichotta says. "It's big; it's growing."

For more information on Wildlife Sciences products, visit [www.suetplus.org](http://www.suetplus.org) ■



Jack Johnson, head of AURI's coproducts plant in Waseca, has helped Wildlife Sciences improve its production processes.



## AURI at work

AURI assistance to Wildlife Sciences has included:

- Product analysis
- Recipe reformulation
- Package upgrading
- Process development
- Equipment sourcing
- Label design and printing assistance



# Strength in numbers

## AURI is leading an effort to bring Minnesota lamb baaack

BY E. M. MORRISON

Fifty years ago, there were eight million stock sheep in Montana, North and South Dakota and Minnesota. Now, there are fewer than one million.

In an effort to help revive the Midwest's waning sheep industry, AURI and the Minnesota Department of Agriculture are encouraging lamb producers from three states to form a regional marketing group, such as an LLC, LLP or cooperative. The group would help sheep farmers grow a uniform, consistent product, sell lamb more profitably, and expand their operations.

An ad hoc group of farmers, scientists and agriculture officials from Minnesota and the Dakotas has been meeting for a year to plan the marketing effort. Now the leaders are asking local lamb producers to join in.

"It's a super idea — working together towards the common goal of increasing lamb production and consumption," says steering committee member Bill Head, director of sheep research at the West Central Research and Outreach Center in Morris, Minn.

No other sector of the U.S. livestock industry has declined as dramatically as sheep, Head says.

Over the last 50 years, sheep farm receipts fell nearly three-fourths, according to the USDA. In Minnesota last year, sheep and lamb receipts were just \$11.5 million — one-tenth of one percent of farm revenues.

What happened to all the sheep? "It's economics," Head says.

### High costs, soft demand

Rising labor and feed expense, restrictions on predator control and limits on public grazing

have all pushed up lamb production costs.

Meanwhile, commodity prices for meat and wool have fallen sharply. New synthetic fibers cut into demand for wool, once the main product of the U.S. sheep industry. "We used to say lamb was a byproduct of the wool industry," Head says.

Demand for meat has plunged, too. Annual U.S. lamb consumption is down to one pound per person. "We have two or three generations in this country who have never even tried lamb, never been exposed to it." Unlike the beef, pork and chicken sectors, Head adds, the lamb industry failed to develop fast food fare or new processed products.

U.S. lamb costs more than other meats, too. "That's the main problem in marketing lamb," Head says. "Most consumers buy meat according to price." In addition, American producers face tough price competition from imported lamb. Farmers in Australia and New Zealand raise and ship lamb year-round for less than it costs to grow it here.

### A few bright spots

There are some encouraging developments in the lamb industry, says Dennis Timmerman, AURI project director in Marshall.

Domestic lamb gets high marks for flavor and tenderness, he says. And recent immigrants from Africa, Asia and Mexico, where lamb is a staple food, are expected to spark more demand.

New ewe price supports are encouraging farmers to expand their flocks. The recent farm bill includes federal subsidies for wool and premiums for carcass quality and out-of-season marketing. In addition, a new check-off program will provide money for national lamb promotion.

unbiased information on crop and livestock production, while AURI strives to add value to those commodities by developing new uses and new markets. But when those paths cross, partnering enables both entities to meet their goals.

### Provender for pigs

A case in point: the AURI coproducts utilization lab processed some of the feed used in a recent SROC swine nutrition study. Normally not involved in feed projects, AURI's interest was piqued because one of the ingredients showing positive results is a byproduct from an ag processing operation.

"In this case, the feed is used in trials at different stages of swine nutritional needs," says Al Doering, a researcher at the Waseca lab. "Positive results could mean significant use of a product that right now has low value.



PHOTO BY ROLF HAGBERG

Even in today's difficult climate, Head says, skillful farmers can make a profit raising sheep. In field trials at the Morris research station, for example, five lamb-ewe pairs per acre of dryland pasture produced net returns of \$145 per acre, minus land costs. "That's better than corn," Head says.

### Why work together?

Most of Minnesota's 2,400 sheep farmers raise lamb as a hobby or sideline, not as a livelihood. Flocks tend to be small — 40 to 50 ewes — and often have "six or eight different breeds," Head says. "It's hard to get a consistent product that way." Lacking efficiency, small growers struggle to cover their costs, especially if they sell on the spot market.

Producers could gain an advantage by standardizing production and marketing their lamb together, Timmerman says. That is what some southern Minnesota sheep farmers are doing, says Al Doering, a lamb producer from Good Thunder and a researcher at AURI's coproducts lab in Waseca.

Doering and his father run a 250-ewe flock, raising about 400 market lambs per season. He belongs to a marketing group that sells 20,000 fat lambs a year. Members grow the same breeds and use similar production methods, Doering says. This assures the lambs meet exacting carcass criteria and provide consistent meat yield.

In spite of the soft demand, Minnesota "processors still can't get enough lambs," Doering says. It's one of the few commodities "where we could double our numbers and still

That would be great for a company looking for ways to utilize one of their coproducts."

"It's a win-win situation," says Sam Baidoo, who heads up the SROC's swine nutrition efforts. "Our research is looking at utilizing ag fibers to improve the animals' gut health and reduce antibiotics. The exciting part is that it's working."

The collaboration works because AURI has equipment and expertise to produce the feed, while the SROC has the hogs and the knowledge to evaluate the results.

### Shaping the feed

Another collaboration between AURI and SROC involves the feed's physical shape. A Minnesota livestock company came to AURI with a new technology related to the form of the livestock feed. Having shown positive results in poultry, the feed is now being tested on hogs.

find a market." But to win processing contracts, farmers must be able to guarantee volume and uniform quality — "lamb that will cut out exactly like it did last year and the year before."

Timmerman says the success of the group Doering is involved in could be duplicated on a multi-state scale: "If growers cooperate, they can tap markets they can't get into now. Larger numbers would help them get into higher-value markets."

In addition to marketing clout, a multi-state cooperative would have the muscle to:

- develop uniform standards for "natural" production,
- identify specialty markets,
- assemble performance and genetic data,
- find new uses for trim,
- form alliances with other cooperatives, distributors or retailers.

The leaders of the initiative have also discussed other goals, such as cooperative finishing, centralized processing, feeding and nutrition standards, and consumer education campaigns.

### Calling all champions

The project's steering committee has begun exploring organizational structures. This fall, "we're trying to interest at least three dozen Minnesota producers in the project," says Terry Dalbec of the Minnesota Department of Agriculture. "We're looking for project champions" who will lead the effort beyond the discussion stage.

Timmerman says there is strong interest from Dakota farmers. Now, "it's important that producers in Minnesota come forward."

For more information about the multi-state cooperative, contact Dennis Timmerman at AURI, (507) 835-8990, or Terry Dalbec at MDA, (651) 215-0368. ■

# Beet pulp and pig feed

## AURI and U of M regional centers work together on ag research projects

BY DAN LEMKE

Waseca, Minn. — For some folks, the subjects of sugar beet pulp and swine nutrition generate an attractive force. Witness the bringing together of the AURI Southeast Field Office and the University of Minnesota Southern Research and Outreach Center.

Although AURI is located on the property of the Research and Outreach Center, and both organizations share the common ground of agriculture, they have separate missions. SROC seeks to provide producers with



# 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.

## Kenaf's along for the ride

Kenaf is a fiber source for low-grade paper, particle board and oil absorbents. But kenaf fiber may find its way into car interiors as lightweight insulation against road noise. One advantage of kenaf is its low density — more fiber for less weight. Kenaf fiber's many pores also serve as a natural trap for sound waves.

Source: Dharnidhar V. Parikh, USDA-ARS Southern Regional Research Center, New Orleans, LA, (504) 286-4406, parikh@srcc.ars.usda.gov



## From swine to swimmers

Four years ago, Robert Harrison of Hurdland, Mo., switched from hog production to fish. Between restocking lakes and ponds and supplying food fish to niche markets, Harrison's balance sheet has gone from red to black; his biggest problem is keeping up with demand.

Source: Robert Harrison, (660) 423-5482.

## Corn's positive energy balance

A Michigan State University study finds ethanol from corn has a positive net energy balance. MSU chemical engineer Bruce E. Dale's work contradicts the earlier work of Cornell University's David Pimentel, whose research has been cited by critics of ethanol production. Dale notes Pimentel's report used inaccurate and old data regarding corn yields, energy inputs and byproducts.

Source: www.AgWeb.com

## Color Cargill Dow green

Cargill Dow, LLC received the Presidential Green Award in June for its NatureWorks PLA process to make plastic from corn. The NatureWorks technology uses up to 50

percent less petroleum resources than comparable plastics. In addition, PLA generates 15 to 60 percent less greenhouse gases.

In April, Cargill Dow opened the first world-scale manufacturing plant for PLA in Blair, Neb. At capacity, the plant will produce more than 140,000 metric tons annually for customers in North America, Europe and Japan. Companies such as Coca-Cola, Sony and Dunlop are already using NatureWorks PLA in products and packaging materials.

Source: www.cargilldow.com.

## The world likes windy Dakotas

Informational meetings on wind energy were held in several South Dakota communities in July. Senator Tom Daschle says developers from around the world see South Dakota as a potential location for large-scale wind energy development.

Source: <http://biobased.org>

## Straw earns bucks in Texas

Some Texas farmers are earning an extra \$36 per acre by selling wheat straw to Affordable Building Systems in Whitewright, Texas. ABS converts straw into building panels, primarily for commercial office construction.

The composite panels' advantages include sound and fireproof qualities, easy installation and adaptability, and cost savings. ABS is one of four companies invited to travel to Washington, D.C. to bid on the Pentagon's renovation.

Source: Delta Farm Press, July 12, 2002.

## Seize the carbon

Louisiana-based Entergy Corp. has agreed to lease sequestered carbon credits from the Pacific Northwest Direct Seed Association as part of a pilot program to offset carbon emissions from Entergy's power plants. More information on carbon sequestration can be found at [www.fe.doe.gov/coal\\_power/sequestration/index.shtml](http://www.fe.doe.gov/coal_power/sequestration/index.shtml).

Source: Cooperative Partners, May/June 2002.

## Switching to grass

Alliant Energy is testing small amounts of switchgrass as an alternative to coal at its Ottumwa generating station in Chillicothe, Iowa. Eventually, switchgrass could comprise five percent of the fuel burned at the station. About 80 farmers are involved in the project, which is managed by Chariton Valley Resource Conservation & Development, Inc., of Centerville, Iowa.

Source: Hay & Forage Grower Magazine, December 2001.

## Biodiesel boom

The State of Minnesota will require a two-percent blend of vegetable-oil or animal-fat biofuel with diesel fuel by June 2005, sooner if certain production levels are met. While Minnesota is the first state to mandate a biodiesel blend, it is unlikely to be the last. Such legislation is being considered by the U.S. Congress and other states. Legislation is also pending to provide tax breaks so biodiesel can compete with petrodiesel.

Source: Rural Business and Co-op Newsletter, Spring 2002; Doanes Agricultural Report, June 14, 2002.

## Bread of soy

An Ohio State university researcher has developed bread with 6.25 grams of soy protein per serving. Seventy percent of taste-test participants preferred it to a wheat bread. Food manufacturing giants as well as neighborhood bakers may license the recipe from OSU.

Source: Illinois Soybean Farmer Leader Newsletter, May 2002.

## Soy gel plays ball

Researchers at Southwest Texas State University have formulated a soy-gel ink for use in inexpensive ballpoint pens. Made with soy resin, the new ink performed well in early testing and may be an economical alternative to ink made with petrochemicals.

Source: Illinois Soybean Farmer Leader Newsletter, May 2002.

## Butter from the sun

Sunbutter, ground from sunflower seeds, is a fresh alternative to peanut butter, to which some people are allergic. It was developed through an agreement between ARS and Red River Commodities, Inc., Fargo, N.D.

Source: Doane's Agricultural Report, June 21, 2002.

## Landlocked ginseng

Ohio State University researchers are attempting to grow American ginseng and other non-timber forest products in order to boost profits for farmers raising alternative crops.

According to the USDA's National Agroforestry Center, prices for wild-simulated ginseng have risen high enough to be profitable for landowners with suitable land. Buyers pay between \$300 and \$400 per pound for wild ginseng root, compared to \$10 to \$15 for greenhouse-cultivated roots.

It takes about nine years to grow a marketable ginseng root. According to the Agroforestry Center, a half-acre of wild-simulated ginseng could yield a net profit of \$16,300 over a nine-year period.

Source: Rafiq Islam, Ohio State University, (740) 289-2071, islam.27@osu.edu.

## Eco to the East

Recent declines in cost and increased emphasis on eco-friendly products have led to greater use of "green" plastics in Japan.

Bioplastics have also become more resilient and are making their way into electronics product casings such as those in Walkmans and personal computers.

Source: Financial Times Limited.

## Milk fat comes out fighting

Milk fat, maligned as a heart-disease contributor, produces a potent cancer-fighter, say Ohio State University scientists. Using lab mice, the scientists found that about half of the vaccenic acid consumed in milk fat is metabolized into conjugated linoleic acid, a powerful natural anti-carcinogen. The process is called desaturation.

Source: Don Palmquist, Ohio State University, (330) 263-3795, palmquist.1@osu.edu.



## Other than wood ...

About 250 native Minnesota plants are subject to commercial or hobby harvest, according to a new University of Minnesota Web site titled "Non-Timber Forest Products and Implications for Forest Managers." Four brochures are available that detail the production and marketing of specialty forestry products.

Source: University of Minnesota Extension Service, 1-800-204-1295, [www.unl.edu/nac/news/html](http://www.unl.edu/nac/news/html) [www.extension.umn.edu/environment](http://www.extension.umn.edu/environment).

## Believe it's better

The Better Bean Initiative is a checkoff-funded program designed to accelerate the development and availability of U.S. soybeans with enhanced oil and meal composition. Over the past three years, BBI has been the focus of ARS scientists at nearly a dozen locations. The first variety developed through BBI is "Satellite," which produces half the

# Ag on the Web

BY JENNIFER PENA

Come explore the commodities in your everyday products. The following sites are sure ways to get growing and processing information, with tidbits on new food and nonfood uses for these commodities. And check [www.auri.org](http://www.auri.org) for news about Minnesota agriculture.

## Corn's zillion uses

[www.ontariocorn.org/products.html](http://www.ontariocorn.org/products.html)

The Ontario Corn Producers have a handy page if you're looking for corn trivia. A "Zillion Uses For Corn!" is a list of the ways we use corn today, with product information and photos. The OCPA site also has plenty of other resources on corn, such as market prices, news releases, facts and figures and links.

## All the soy in the world

[www.indianasoybeanboard.com](http://www.indianasoybeanboard.com)

Want to cook up some soy chili? Indiana's Soybean Board has the goods on everything soybean, including a list of soy-based products and foods. Read about soy candles, crayons, biodiesel, ink or road dust suppressant; check out student contests on soybean inventions; or sign up for an e-mail newsletter. There's also a "Beautiful Farms of Indiana" art contest page featuring colorful drawings using soy-based crayons.

## Grains in Eden

[www.edenfoods.com/info/foodinfo.html](http://www.edenfoods.com/info/foodinfo.html)

If you're looking for quick-loading info without the frills, this page is for you. The Eden Foods company has dedicated some basic pages to whole grains such as buckwheat, amaranth and barley. You'll get a description of the crop, information on where it's grown and what it's used for, some nutritional information and a basic recipe.

## Wheat by Caitlin

[www.rochedaless.qld.edu.au/wheat.htm](http://www.rochedaless.qld.edu.au/wheat.htm)

Students from the Rochedale State School in Australia have added their projects on various subjects to the school's site. One project, Wheat by Caitlin, is an overview of how the crop is grown, along with some production numbers. There is also a section on food products containing wheat and a map of where wheat is grown in Australia. Other projects featuring Australia-grown commodities include cotton, pigs and angora goats.

## The beets go on

[www.geo.msu.edu/geo333/sugarbeets.html](http://www.geo.msu.edu/geo333/sugarbeets.html)

This site features an interview with a Michigan Sugar employee and explores the history of sugar and sugar beet production. Read about other uses for sugar beets, such as animal feed, view a close-up photo of a beet and a 1939 sugar-beet farm, and see a map of where U.S. beets are grown. ■

ELSEWHERE from page 13

saturated fat and linoleic acid of conventional varieties. Oil from Satellite is being tested by food manufacturers.

Source: *Progressive Farmer*, July 2002.

## Pondering sweet potato pies

Southern Growers, Inc. in Mason, Tenn. is using a \$150,000 market development grant from the USDA to develop business and marketing plans for processing sweet potatoes into retail products, particularly sweet potato pies.

Source: [www.rurdev.usda.gov/rbs/coops/vadg.htm](http://www.rurdev.usda.gov/rbs/coops/vadg.htm).

## Hungry for TSP?

Textured soy protein (TSP), a nutrient-dense food, is being used to meet the nutritional needs of the world's hungry, thanks in part to the checkoff-funded World Initiative for Soy in Human Health (WISHH).

TSP is currently being distributed by relief agencies in Guyana and is in school lunch trials in the Republic of Georgia. In Botswana, a program incorporating soy into local foods is being developed. WISHH holds training workshops for volunteer organizations to show them how to include soy in food relief programs.

Source: *Illinois Soybean Association*, Theresa Miller, (309) 663-7692, [millert@ilssoy.org](mailto:millert@ilssoy.org).

## Loving the locals

Consumers choose locally grown food because it's fresh — and to support small local farmers. They are also more willing to pay higher premiums for "locally grown" than "organic," according to a new University of Minnesota analysis by Luanne Lohr. Her report is available on the Minnesota Institute for Sustainable Agriculture Web site at [www.misa.umn.edu](http://www.misa.umn.edu).

On a related note, the directory for Minnesota-grown produce can be found at [www.minnesotagrown.com](http://www.minnesotagrown.com).

Source: Luanne Lohr, (706) 542-0847, [llohrr@agecon.uga.edu](mailto:llohrr@agecon.uga.edu)

## So many uses, so many alfalfas

Plant breeders at the ARS Plant Science Research Unit in St. Paul, Minn. are developing alfalfa varieties for niche markets. Varieties under development include one for bioenergy, one with a higher nutritive value for cattle forage, and others for growing on marginal soils, for fixing more nitrogen in the soil, for remediating excess fertilizer and pesticides, and for producing industrial products, including medicine, industrial enzymes or plastics.

Source: Don Comis, ARS Information Staff, (310) 504-1625, [comis@ars.usda.gov](mailto:comis@ars.usda.gov) ■



PHOTO INSET BY ROLF HAGBERG / PRODUCT PHOTO COURTESY WWW.APPLE.COM

# A blooming future

## Study reveals growing potential for landscape and nursery crops

BY DAN LEMKE

**M**ove over, soybeans. Minnesota producers may want to add hostas, lilies and river birch to their crop rotations.

An industry appraisal spearheaded by the Minnesota Nursery & Landscaping Association reveals that Minnesota's nursery and landscape business is a multi-billion dollar industry that grew 97 percent over the past five years.

The recent study shows the state's professional green industry generates yearly sales of more than \$2.1 billion. About \$350 million comes from trees, shrubs, annuals, perennials and potted plants grown on more than 22,000 acres. An additional 13 million square feet of greenhouse space is used to grow everything from azaleas to zinnias.

"One intent was to benchmark the impact this industry has in Minnesota," says Michael Sparby, project director for AURI, one of the study's sponsors. "But we also wanted to take a look at opportunities. ... In most cases you're dealing with a higher-value specialty crop that can be grown on smaller acreages."

### *Bloomin' fast*

According to USDA's Economic Research Service, the nursery and greenhouse industry is the fastest growing segment of U.S. agriculture. Nursery and greenhouse crops represent the second most important sector — ranking seventh among all commodities in cash receipts, but among the highest in net income.

"There are many factors why the industry has grown, including the housing boom," says Bob Fitch, executive director of the Minnesota Nursery and Landscape Association. "The strong economy from 1995 to 2000 meant a lot of people had disposable income to spend on their homes. Now, with the weaker economy, people are staying home and taking care of their yards. Even this year, our industry has remained strong."

The study anticipates that over the next five year, demand for annuals and perennials will increase by 30 percent and demand for trees and shrubs by 47 percent.

Specialty crops grown in Minnesota can be exported as well. Last year, nearly \$100 million in plants and landscaping services were sold to other states and another \$5 million in plant materials were exported to Canada.



### *Here to stay*

In addition to substantial sales, the industry is a major employer with more than 10,000 full-time employees and 18,000 seasonal and part-time workers.

"The success of our industry is a testament that small, family-owned and operated businesses can be created and can succeed. Most of our industry's companies have fewer than 10 full-time employees, yet collectively we provide 28,000 jobs. We're a stable and growing part of the Minnesota economy," says Jim Wilson, MNLA president. Wilson owns and operates wholesale tree farms in Chanhassen and New Germany, Minn.

The economic impact study was the first comprehensive review of the state's professional green industry. Data was analyzed at St. Cloud State University. Project partners included AURI, the Minnesota Department of Agriculture, AgStar Financial Services and the University of Minnesota horticulture department. ■

Minnesota's \$2 billion nursery and landscaping industry, which includes 22,000 acres of perennial production (top left), landscape services such as installing decorative retaining walls (top right), and 13 million square feet of greenhouse space (bottom right), grew 97 percent over the past five years.



CONTRIBUTED PHOTOS



**QUICK QUOTE:** "Many of (the ag fuels) are more economical to burn than wood, oil and natural gas." — Jack Johnson

# The Btu busters

## AURI fuels initiative compares the heat values of popular ag fuels

BY GREG BOOTH

Waseca, Minn. — When a solid-fuel stove manufacturer wanted to compare the heat energy values of renewable fuels, he couldn't find a chart to look them up. So AURI scientists Jack Johnson and Al Doering decided to create one.

"We believed there was a need," Johnson says. "There's been an explosion of companies looking for renewable fuels. Wood has been the classic used for years, but now with more pressure on that, and higher prices, many ag products have become competitively priced." (See Ag Innovation News, July 2002)

Stove manufacturers, mining operations, utilities and other fuel buyers can use the AURI Fuels Initiative's chart to compare Btus (British thermal units), ash and sulfur for 25 ag-based fuels, from alfalfa to wheat. "This information hasn't been available anywhere in the country in any one spot, so this is really cutting edge," Johnson says.

### Heat of the matter

Values testing was done at three labs — Minnesota Valley Testing in Bismarck, N.D., Twin Port Labs in Superior, Wis., and AURI's lab in Marshall, Minn. As numbers started coming in, significant differences were revealed, Johnson says. The Btu value for high-oil corn, for example, is about four percent higher than shell corn. Dried distillers grain, a byproduct of ethanol plants, also has a relatively high Btu value.

"One of the best looking biomasses right now is dried distillers grain," Johnson says. Due to the growth of ethanol plants in the Midwest, distillers grain is

receiving a lot of focus from companies utilizing renewable fuels, Doering adds.

Values were calculated for products with moisture and then recalculated on a dry-matter basis. Moisture lowers Btu value because energy must be used to dry the fuel before burning. A dry-matter comparison helps fuel buyers compare products, Doering says.

The chart does not include cost per Btu, the researchers say, because those costs vary based on market prices, volume purchased and transportation. Johnson says he will work with individual clients to help determine costs.

### Cost-effective fuel

The tested products came from a geographically small area in southern Minnesota, Doering emphasizes, so actual ag fuel performance could vary. Cost effectiveness of any fuel, he says, varies due to moisture, seasonal changes, transportation and the form in which the fuel is burned. Johnson says the figures should be used to "compare relative combustion specifications."

"Many of (the ag fuels) are more economical to burn than wood, oil and natural gas," Johnson says. While coal is still cheaper, most renewables "burn much cleaner" and are blended in to meet emission standards.

Steel plants and utilities are some of the potential renewable fuels users; home use includes pellet and corn stoves.

The fuel chart is available from AURI's Waseca office and is posted on AURI's Web site: [www.auri.org](http://www.auri.org) ■

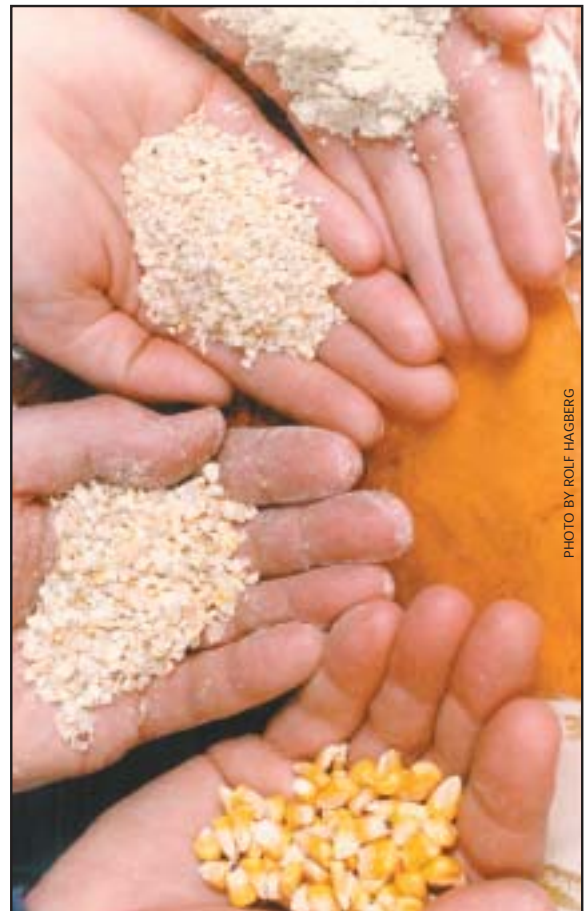


PHOTO BY ROLF HAGBERG