Ag Innovation News

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PHOTOS BY ROLF HAGBERG

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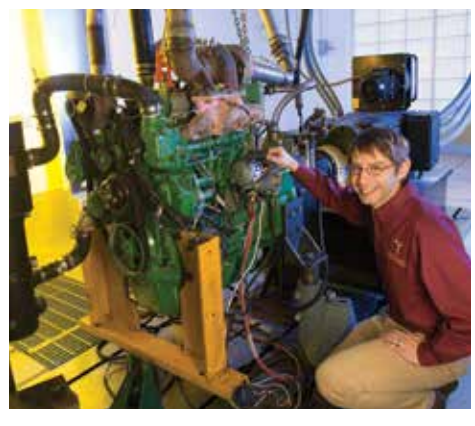


FAMILY RECIPE FOR SUCCESS

Lao beef jerky appeals to Midwestern audiences

BY JONATHAN EISENTHAL

As do most couples, Mike Davis and Mali Kouanchao have a unique love story. While the Tennessee native and the Laotian-American were falling in love with each other, Davis also fell in love with something else—his in-laws' Lao cooking. And while all of the family recipes were unique and tasty, it was Aunt Thaipet's beef jerky that was the winner of his tastebuds.

"When my Aunt Thaipet makes it, she has a very specific technique and quality control," explains Kouanchao. "She makes the beef jerky really thin. She uses lots of special seasonings and pays careful attention to each piece of jerky."

"I've never tasted anything like it. I was hooked on it instantly," Davis says. "It's sweet. It's crisp. Everything I'd known about beef jerky growing up—the stuff you get at the convenience store or the truck stop—this was totally different. Even our friends became obsessed with it."

Davis and Kouanchao knew there could be wide interest in this down-home Lao treat that could appeal to the gourmet foodie as well as the backpacker looking for a portable snack.

When Mike Davis was falling in love with Mali Kouanchao, he also fell in love with her Aunt Thaipet's unique beef jerky. The family recipe was the basis for the creation of Cool Jerk.

PHOTOS BY ROLF HAGBERG

The Birth of Cool Jerk

The couple started kicking around the idea of commercializing the family recipe. In 2010, they were brunching at Hell's Kitchen in downtown Minneapolis and saw a flyer that announced a beef jerky competition.

"We took that as a sign," says Davis. "We didn't win, but we had a lot of support. That was the first push to creating Cool Jerk."

The pair, who still keep their day jobs as a graphic designer (Davis) and a web designer (Kouanchao), started looking into ways to scale-up production to bring the jerky to market. In the process of cold-calling meat processors, Kouanchao learned about AURI and the services it provides to Minnesota-based food entrepreneurs.

Cool Jerk had a unique problem, explains AURI Meat Scientist Carissa Nath, because it utilized a process that wasn't typical of most beef jerkies. This made it more difficult to find the right processor. Nath used her network of resources, including the Minnesota Association of Meat Processors and information from an AURI meat processing survey, to connect the couple with Big Steer Meats in St. Paul, Minnesota.

In addition to helping find the right co-packer, AURI scientists Ranae Jorgenson and Charan Wadhawan conducted the nutritional analysis and testing work required for labeling. Nath also continues with testing to learn the shelf life of the product.

AURI helped connect Kouanchao (above, left) with Charlie Cory (above, right) at Big Steer Meats in Saint Paul, Minnesota, to help produce and package Cool Jerk.

Hitting the market

Davis and Kouanchao launched their product on the website *cooljerk.net*, where they made their first sales. They are actively seeking stores willing to carry their products and are currently in six locations in the Twin Cities. Cool Jerk will be in 11 different locations by the end of the summer.

The entrepreneurs are also getting the word out about Cool Jerk through various events including the Food and Wine Experience at Target Field, the North Coast Nosh at the American Swedish Institute, and the Food and Gift Show at the Grainbelt Bottling House. "It's a great way to get our products in front of not only consumers but store owners, too," explains Davis.

Cool Jerk is the perfect portable snack for families, backpackers, and others.

Flavor and process

Davis and Kouanchao have developed four distinct flavors:

ORIGINAL
SWEET & SPICY
LEMONGRASS
NATIVE LAO HOT

Working with their processor, Big Steer Meats, the couple simplify their process. "Even with the way they make it, it's still quite laborious," says Kouanchao. "We are working on solutions that will make it easier and therefore increase revenue as well."

AURI's Nath is also helping the couple develop and test a second line of jerky that will include non-GMO ingredients and no MSG. These changes would help get the product into food co-ops, which set stringent rules about their products.

"It was a lot of fun," says Nath about working on Cool Jerk. "I enjoy helping to develop a product. I get to use my science background to help determine the right ingredients and cooking process to make the best possible final product."

Next steps

To further develop their product and business, Davis and Kouanchao have applied for a grant from the Minnesota Department of Agriculture for business development. They are also entering the Minnesota Cup, the largest statewide new venture competition in the United States. This is the first year that the competition has a division specifically for food, agriculture and beverage. The Cool Jerk team offered samples at the division's fall kickoff and is now entering the competition, which takes place throughout the summer of 2014.

"The Minnesota Cup puts startups together with food professionals, people in the industry that will help guide or mentor the businesses and help us with our business plan," explains Kouanchao. "That business plan will then be reviewed by a panel of industry experts."

"When people try Cool Jerk, they believe in it and they back us 100 percent," concludes Davis. "We just need to get it into more people's mouths and minds." ■

Find Cool Jerk in the following Twin Cities locations:

AURI and Cool Jerk

Idea to reality:
Commercialize a family recipe for Laotian-style beef jerky to offer a new product that appeals to a wide audience seeking portable, convenient foods.

AURI's role:
Innovation networking to connect the entrepreneurs with a meat processor who could help them, as well as nutritional analysis and labeling.

Outcome:
Cool Jerk will be in 11 different locations in the Twin Cities by the end of summer 2014. Check *cooljerk.net* to order online, too.

Cheaper, cleaner diesel fuel

Research shows that hydrous ethanol may have fewer emissions and could lower fuel costs

PHOTOS BY ROLF HAGBERG

Will Northrop of the University of Minnesota (second from left) shows AURI's Rod Larkins (left) and Minnesota Corn Research & Promotion Council members Richard Peterson (second from left) and Jerry Ploehn (right) how this diesel engine can be retrofitted to use hydrous ethanol, which would decrease the environmental impact of diesel exhaust.

BY LIZ MORRISON

A cheaper, cleaner diesel engine fuel is on the horizon.

Engineers at the University of Minnesota's Center for Diesel Research are developing technology to use hydrous ethanol as the primary fuel in diesel engines. Hydrous ethanol contains more water than traditional anhydrous ethanol and costs less to make.

The research, supported by AURI and the Minnesota Corn Growers, could benefit the environment and the ethanol industry, as well as farmers and other diesel fuel users. Among the advantages of using hydrous ethanol in diesel engines:

- fewer harmful emissions;
- lower fuel costs;
- more net energy from ethanol;
- smaller carbon footprint; and
- expanded markets for ethanol.

"This could be a good win for agriculture," says Rod Larkins, AURI senior director of science & technology.

Consumer research shows increased demand for homegrown renewable fuels with lower emissions. To help meet that demand and also create new markets for ethanol, corn growers are investing in research to develop new uses for the renewable, corn-based fuel. According to the federal Energy Information Administration, U.S. ethanol production is expected to reach 15 billion gallons this year.

Jerry Ploehn, a farmer from Alpha, Minnesota, who serves on the Minnesota Corn Research & Promotion Council says fueling diesel engines with hydrous ethanol could open up another large market for ethanol. In Minnesota, for example, replacing just 10% of diesel fuel with hydrous ethanol would consume 131 million gallons of ethanol—about 13% of the state's current production.

More net energy, smaller carbon footprint, fewer emissions

Hydrous ethanol offers several advantages as a diesel fuel replacement, says William Northrop, an assistant professor of mechanical engineering at the University of Minnesota, who is leading the alternative diesel fuel research.

- **Lower cost:** It's less expensive to make than traditional anhydrous ethanol, the fuel that's added to gasoline. About 90% of distillation energy could be saved by using 160-proof hydrous ethanol, which is 80% ethanol by volume.
- **Good for the environment:** Total greenhouse gases emitted in the production of 160-proof ethanol are about 20% less than for traditional ethanol. Dual fueling with hydrous ethanol also cuts harmful diesel engine emissions, such as soot and nitrogen oxides, Northrop says.

"Our air is cleaner now because of ethanol," says Richard Peterson, a corn and soybean farmer from Mountain Lake, Minnesota, who serves on the Minnesota Corn Research & Promotion Council and the AURI board of directors. "That's one reason we are interested in this research."

Two research projects explore dual fueling

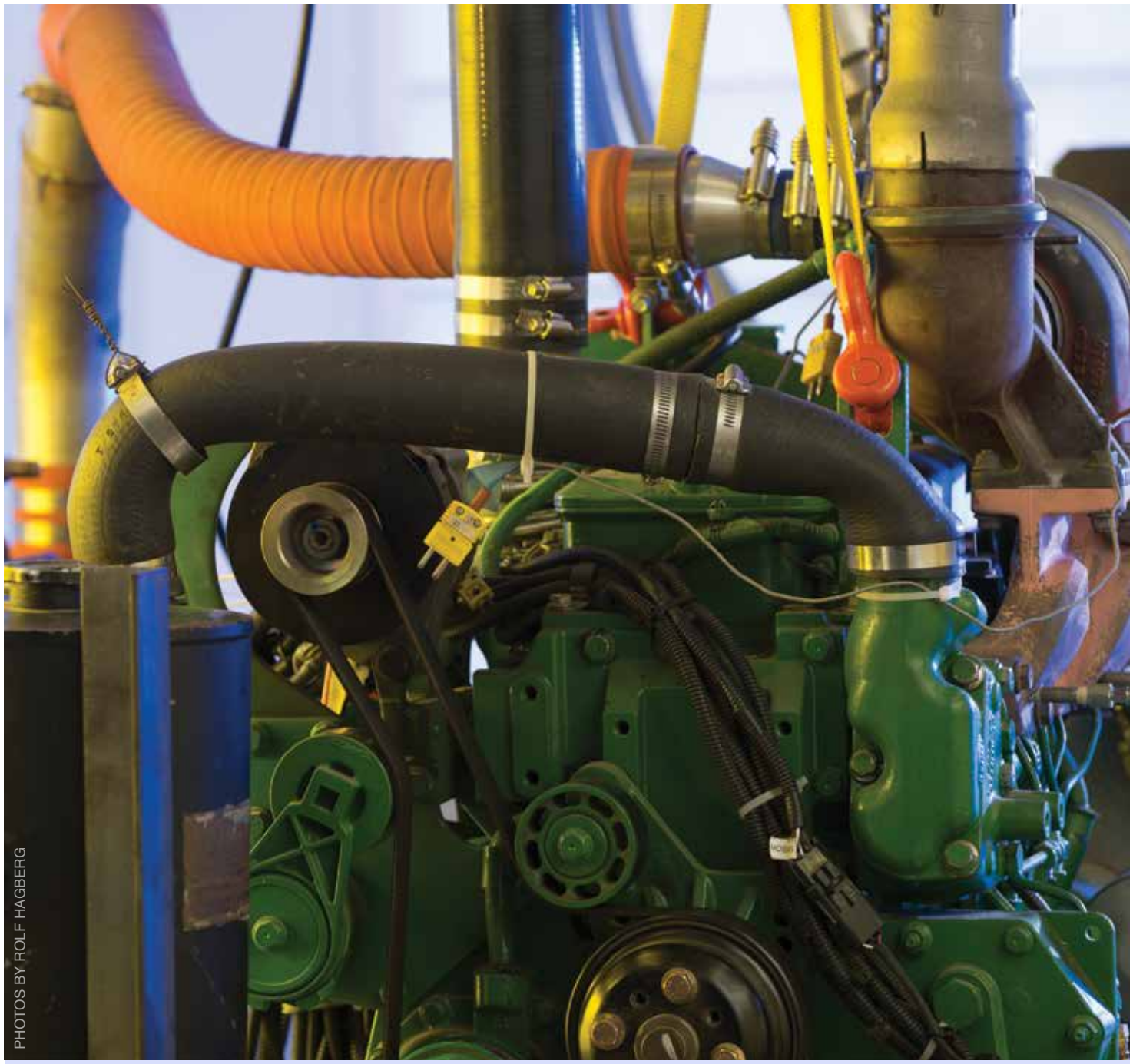
Northrop is conducting two research projects to test the use of hydrous ethanol in diesel engines.

Study One: Proving hydrous ethanol can be used for fuel

In the first study, Northrop recalibrated an Isuzu 4HK1-TC diesel engine to burn two fuels. The engine uses an advanced fuel injection system called reactivity controlled compression ignition (RCCI).

One hundred sixty-proof ethanol was injected into the RCCI engine's air intake manifold and was mixed with diesel in the combustion chamber, which allowed ethanol to be the primary fuel source.

"We showed we could get 85% of fuel energy from hydrous ethanol" in an RCCI engine, Northrop says. "This is much higher than what's been achieved in the past." In addition, Northrop says, emissions were kept below the EPA's Tier 4 standards for off-road engines—with no loss of fuel economy or engine performance.



PHOTOS BY ROLF HAGBERG

Diesel test engines at the Center for Diesel Research, like the one pictured, have added sensors to monitor the improved emissions and performance with hydrous ethanol.

Renewable times two

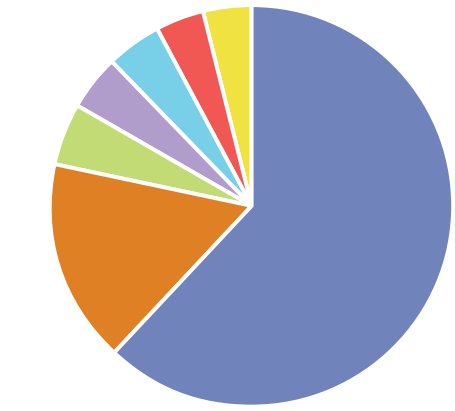
Ethanol injection works with biodiesel, too

Hydrous ethanol can be used safely in diesel engines with conventional diesel fuel or renewable biodiesel, says William Northrop, a researcher at the University of Minnesota Center for Diesel Research.

Currently, Minnesota requires 5% biodiesel to be blended with #2 diesel fuel year round. On July 1, the Minnesota mandate increases to 10% biodiesel through October.

Minnesota has three biodiesel plants that produce about 63 million gallons of biodiesel, primarily from soybean oil.

Diesel Use in Minnesota, 2009



Source: EIA

Farmers are the second largest users of diesel fuel in Minnesota, offering a large potential market for a renewable diesel fuel replacement, such as hydrous ethanol.

Study Two: Creating an aftermarket retrofit system

RCCI dual-fuel systems would need to be implemented by engine manufacturers, Northrop says. But until demand for dual-fuel-mode engines actually exists, he says, engine makers are unlikely to respond with new products. "That's why we are going for an aftermarket retrofit system." The question is: "Could we achieve similar emissions improvements with an add-on system" for older diesel engines?

That's the goal of the second research project. Northrop's team is developing a timed port-injection system that could deliver ethanol to a wide variety of existing diesel engines.

The initial research is being done on a 4-cylinder, John Deere 4045H Tier 2 diesel engine—a model that is widely used on farms. A timed port-injection system "will allow us to increase the amount of ethanol injected, realizing a more significant reduction in emissions," Northrop says. That could eliminate the need for expensive particulate filters and catalytic devices to meet off-road emissions standards in older diesel engines.

On-farm uses promising

Dual-fuel-mode diesel systems require two separate tanks to deliver the fuel to the engine—one tank for hydrous ethanol and one for diesel. That's likely to limit over-the-road applications, says AURI's Doug Root, senior scientist of biomass & renewable products technologies.

Initial applications of dual-fuel diesel engines could be at ethanol plants themselves, Root says. Plants could divert hydrous ethanol during the distillation process and use it to fuel the 'on-site' diesel powered vehicles and back-up generators, cutting both processing and fuel costs.

On the farm, the technology would be a good fit for diesel tractors, harvesters and irrigator pumps, says Peterson, the Mountain Lake farmer.

"AURI sees the use of hydrous ethanol in off-road use of diesel fuel as a real opportunity for Minnesota agriculture," concludes Root. ■

The diesel test engine at the University of Minnesota is being retrofitted to use hydrous ethanol.

AURI and hydrous ethanol research

Idea to reality:
Minnesota corn growers are seeking new uses and markets for corn-based ethanol. Hydrous ethanol offers many advantages as a diesel fuel—if a reliable hydrous ethanol injection system can be devised for diesel engines.

AURI's role:
AURI is helping to fund the research, is providing project management services and will identify field test sites for the new technology producing hydrous ethanol research.

Outcome:
In the first research phase, engineers showed that an advanced fuel injection system diesel engine can be operated on up to 85% hydrous ethanol without penalty in fuel economy or emissions. In the second phase, researchers are developing a hydrous ethanol, timed port-injection system that could be added to older diesel engines.

Partners:
University of Minnesota Center for Diesel Research; Minnesota Corn Growers Research & Promotion Council; CleanFlex Power Systems.

INNOVATIONS AT THE BEEF COUNTER

How consumer preferences are changing the beef processing industry

BY LIZ MORRISON

The top-selling steak at Big Steer Meats in St. Paul, Minnesota, is the "Al Capone"—a butterflied chuck-eye steak stuffed with hard salami, capicola, green olives, and provolone cheese. It's seasoned and ready for the grill, complete with detailed cooking instructions.

The Al Capone Steak, which won an Innovative Beef Award from the Minnesota Beef Council, exemplifies several new consumer trends, says Charlie Cory, owner-operator of Big Steer Meats, a wholesale and retail meat processor.

At the beef counter, he says, customers are "looking for more value and convenience, and also for something different."

In addition, consumers want smaller, leaner beef cuts and more ready-to-eat products, says Karin Schaefer, executive director of the Minnesota Beef Council. Consumers are also seeking more information about how their meat is produced and processed, she says.

Consumer preferences are changing the beef processing industry, bringing innovative products, added value, and a focus on health and education, says AURI Meat Scientist Carissa Nath. She works with many smaller Minnesota meat processing companies, like Big Steer Meats.

Here is a quick look at some of the things consumers are looking for when they buy meat, and how the beef processing industry is responding.

PHOTOS BY ROLF HAGBERG

More value

There are still plenty of folks who "are willing to spend a little more for a rib eye, New York strip, or tenderloin," Cory says. At the same time, though, more consumers are "looking for value," he says.

Processors are now offering more value cuts that were previously just used as trim, such as chuck-eye, flat iron, and tri-tip steaks. These cuts have less fat marbling and need special cooking techniques, Cory says, such as marinating or slicing against the grain. The tri-tip steak, for example, "marinated and prepared correctly can melt in your mouth. We do the marinating and explain how to cook it and slice it thin after cooking."

Like Big Steer Meats, more processors and retailers are offering point-of-sale recipe cards and detailed cooking instructions for these new meat cuts, Schaefer adds.

Kurt Krummel of Big Steer Meats prepares products that meet consumer demands including convenience and new, unique flavors.

A farm connection

"Consumers want more of a connection to producers," Nath says. Processors have responded by including producers' stories with packaged products. Processors and retailers are also including more information on labels about how the beef was produced, Nath says, such as "naturally-raised," "grass fed," and "grain finished."

New flavors

Taking a cue from international cuisines, processors and retailers are offering more ethnic meat products, especially Asian- and Hispanic-inspired flavors, Schaefer says. The millennial generation, in particular, "is excited about food as a cultural experience. They have an openness and interest in new flavors and foods."

Millennials "are looking for new and interesting foods," agrees Cory, whose best-selling brat is habanera-mango. "They are adventurous eaters."

Nutritious snacks

"Healthy but convenient snacks are a growing category" throughout the food processing industry, says AURI food scientist Charan Wadhawan.

Beef processors have responded with creative snacks, such as low-sodium beef sticks and beef jerky in interesting flavors, Schaefer says. Big Steer Meats, for example, produces a Laotian-style beef jerky that AURI helped develop. (See Cool Jerk story on pages 2-3.)

Convenience

According to a recent survey, half of Americans don't know at 4:30 p.m. what they are fixing for the evening meal, Schaefer says. "Consumers don't have as much time to cook now," Nath adds, "and they are less confident about their cooking skills than in the past."

These changes have prompted meat processors to do more of the prep work to make dinner quick and easy, Schaefer says. Now, consumers can run to the market after work and pick up products such as:

- marinated or seasoned cuts;
- sliced, assembled, and ready-to-cook dishes, such as beef and cut up vegetables packaged together:
- kabob skewers, marinated fajita strips, or beef pinwheels; and
- fully cooked, ready-to-eat beef products.

The Minnesota Beef Council's Innovative Beef Contest focuses on convenience foods. Erdman's Country Market in Kasson, Minnesota, for example, won recently with "fiesta beef boats"—pasta shells stuffed with ground beef, peppers, beans, and cheese. The fully cooked main course is packaged in a microwavable container. "That's a huge seller for them," Schaefer says.

Cory calls this product category "heat 'em and eat 'em! We are doing a lot more of this." Cooked meat products such as sliced brisket and shredded BBQ beef have become big sellers at Big Steer Meats, he says.

Leaner, smaller beef cuts

The beef industry is offering leaner cuts of meat, aimed at health-conscious consumers who want to limit fat and portion size, Schaefer says.

Consumers can choose from 29 "certified lean" cuts of beef, which meet the American Heart Association's criteria for heart-healthy foods. These are cuts from the front and back of the animal that have less than 10 grams of total fat per 3.5-ounce serving.

The growing number of one- and two-person households has prompted beef processors to offer smaller pieces of meat, too, Nath says. Some of the new, smaller cuts include 4- to 8-ounce top loin filets, rib eye cap steaks, strip filets, culotte steak, and strip petite roasts.

More information

As consumers demand more information about their food, the meat processing industry is becoming "more open about what it does," Nath says. "We're seeing efforts to get more information to consumers about how meat is processed."

The American Meat Institute has put together a series of videos with renowned Colorado State University animal behavior scientist Temple Grandin, called "If meat plants had glass walls." *(bit.ly/1m68fSs)* The videos take viewers through beef processing plants, showing humane livestock handling and slaughter.

Another series of videos from the American Meat Institute, called Meat Myth Crushers, tackles common misconceptions about meat production and processing. *(meatmythcrushers.com)* Interviews with meat scientists set the record straight on topics such as animal treatment in packing plants, food safety procedures, and advanced meat recovery techniques.

Although consumers may not want to know the precise details of meat processing, Schaefer says, "they want to have confidence that what we eat is safe."

At AURI, education is "a natural outgrowth of our work—educating through science," says Amanda Wanke, AURI communications director. "We help educate food processors, so they can help educate consumers. We also work with the commodity groups to bring a science perspective to consumer education." ■

Steven Pinotti of Big Steer Meats makes some of the popular and convenient ready-to-eat meat products pictured above.

BEEF'S BIG 10 NUTRIENTS

1

IRON

Helps your body use oxygen

2

CHOLINE

Supports nervous system development

3

PROTEIN

Helps preserve and build muscle

4

SELENIUM

Helps protect cells from damage

5-6

VITAMINS

B_6 AND B_{12}

Helps maintain brain function

7

ZINC

Helps maintain a health immune system

8

PHOSPHORUS

Helps build bones and teeth

9

NIACIN

Supports energy production and metabolism

10

RIBOFLAVIN

Helps convert food into fuel

Source: Minnesota Beef Council

MEATY WORK

AURI scientist Carissa Nath helps keep meat safe, create new products and much more

BY LIZ MORRISON

When Carissa Nath was working on her graduate degree in meat science, people used to say, "Oh, so you're going to be a meat inspector?"

Some meat scientists do indeed work as federal or state inspectors in packing plants. But meat science is much broader.

Nath works with Minnesota's small meat processors — the state boasts nearly 300 — on new product development, food safety, quality control, and a host of other support services. "I try to serve as the research and development expert for smaller Minnesota processors."

Nath has helped develop more than a dozen new meat products at AURI's state-of-the-art meat lab in Marshall, Minnesota. She has trained hundreds of meat processors in Hazard Analysis and Critical Control Point (HACCP) food safety procedures. And she's had the satisfaction of "helping entrepreneurs get their products into the market."

IT STARTED WITH 4-H

Nath, a Texas native, participated in livestock judging during her 4-H years, and studied animal science at Texas Tech University. As an undergraduate, she participated in meat judging and worked on food safety research at the Texas Tech meat lab. Those experiences "piqued my interest in meat science," she says.

Nath went on to earn a master's degree in meat science at South Dakota State University (SDSU), doing research on food safety and meat quality. After graduate school, she was a research assistant at SDSU for a year, then joined AURI in 2008.

DOING A LITTLE OF EVERYTHING

In a typical week, Nath might

- teach at a food safety seminar;
- advise a small meat processor on quality control or regulatory compliance;
- review the label for a new meat product; and
- go over packaging options with a client.

Nath conducts four HACCP food safety workshops each year around the state with University of Minnesota meat science professor Ryan Cox and the Minnesota Department of Agriculture. She also serves as technical adviser for the Minnesota Association of Meat Processors, and works closely with officials from the Minnesota State Meat Inspection Program.

But the majority of her time is spent with entrepreneurs on product development and testing. "It typically takes at least six months to develop a new meat product," Nath says.

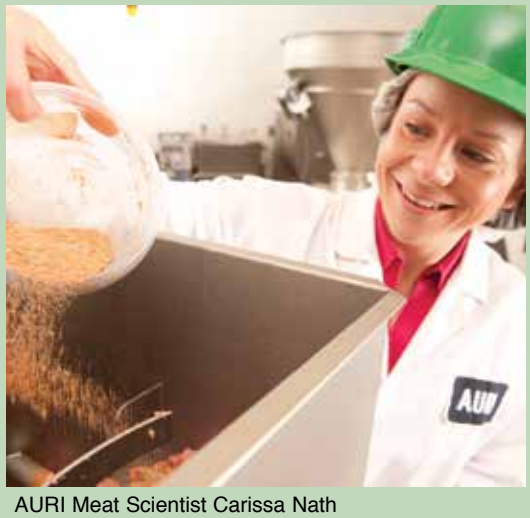
The process often begins with a client's family recipe. Nath will scale up the recipe for commercial quantities, then head to the AURI meat lab to begin testing and revising the formula. Taking a home cook's recipe from teaspoons and cups up to pounds is not straightforward, Nath says. "That's the fun part—using science to see what went wrong and how to improve."

Then Nath conducts sensory analysis and consumer taste tests. She also offers advice on shelf life, and helps with ingredient sourcing and co-packing contacts, as well as packaging and labeling decisions. AURI can also connect clients with business planning and marketing services, she adds.

"What I find really rewarding is to take a product idea and apply 'geeky' science to create a marketable commercial product for the client." ■

PHOTOS BY ROLF HAGBERG

AURI Meat Scientist Carissa Nath works on the Laotian-style beef jerky made by Cool Jerk (featured on pages 2-3).



AURI Meat Scientist Carissa Nath

WHAT DOES A MEAT SCIENTIST DO?

- Research the effects of feed on meat quality, feed conversion, and other production variables
- Inspect meat before and after slaughter to make certain it is free of disease, harmful bacteria and contaminants
- Ensure humane treatment of livestock at packing plants
- Procure animals for slaughter
- Evaluate and grade carcasses
- Develop and monitor food safety procedures at processing plants
- Create and test new recipes and products
- Improve existing products and processing techniques
- Conduct sensory analysis and consumer testing of meat products
- Ensure regulatory compliance
- Improve shelf life, packaging and labeling
- Educate processors and consumers

Emerging Food Safety Interventions

What does it take to ensure that your meat is safe?

BY CARISSA NATH,
AURI MEAT SCIENTIST

The meat industry employs what are called interventions throughout meat processing to improve the quality, safety, and functionality of meat products. This concept is known as the multi-hurdle concept. Several interventions, also known as barriers or hurdles, have to be put into place in order to prevent harmful bacteria from making their way into the final product.

Oftentimes these interventions are the application of organic acids to the product. However, research into new and advanced interventions is continual. In addition, today's consumer is seeking cleaner labeled foods, which means they want foods that are minimally processed, natural, or organic and that have ingredients they are familiar with. Therefore, interventions that will allow products to be made with minimal ingredients such as preservatives or other additives are ideal.

These three interventions show great promise to help the meat processing industry add to their food safety toolbox. ■

Three emerging food safety interventions

High-Pressure Processing

High-Pressure Processing extends the shelf life of products without having to add preservatives and other additives. This appeals to those consumers who are seeking minimally processed or clean labeled foods. The technology works by placing the packaged food product in a sealed vessel. High pressure is then applied in all directions to the packaged product.

The process is considered a cold or non-thermal process, which prevents alterations of taste, texture, and nutrition. Since the process is applied to the food in its final packaged state, the risk of recontamination is greatly reduced. In addition, having access to products that have a longer shelf life leads to less food waste at the retail and consumer level.

Traditionally this process is applied to fully cooked, ready-to-eat meat products versus fresh, raw products. However, the potential for application in raw products is being investigated. Also, many advancements in packaging have been investigated. Since high pressure is applied to the package, it must be able to withstand and hold up to this stress. The packaging must be flexible yet durable.

Ozone Technology

Ozone is a highly reactive form of oxygen and therefore is a strong oxidant and potent disinfecting agent. Here's how ozone is made: oxygen normally exists as dioxygen (O2), but through this process the dioxygen molecule is split into single oxygenatoms. These single oxygen atoms combine with the remaining dioxygen molecules to form a very reactive O3 molecule. These O3 molecules are very unstable, so they must be generated at the time of use. The highly reactive molecules are then added to water for use in sanitation and other food safety intervention applications.

Ozone technology has been utilized as a sanitation intervention for food contact surfaces within processing facilities for a number of years; however, it does have the potential to be directly applied to meat products as well. In addition, ozone is considered an environmentally friendly sanitizer as it quickly decomposes into oxygen.

Bacteriophages

Bacteriophages are live viruses that enter the bacteria's cell wall and devour it. They can be utilized to target specific food-borne pathogens and were first approved for use by the Food and Drug Administration in food in 2006. In the meat industry, bacteriophages have been approved as a pre-harvest intervention to control E. coli O157:H7 on cattle hides. Further, bacteriophages are approved for application in red meat parts prior to grinding to, again, control E. coli O157:H7. Also, bacteriophages can be applied as a post-processing intervention for ready-to-eat products to control Listeria monocytogenes.

AURI to analyze the state of the ag processing industry

AURI is aiming to find out the current state of and opportunities for growth in the ag processing industry in a first-of-its-kind analysis.

"One of AURI's strategic goals is to strengthen Minnesota's ag processing industry in order to increase demand for agriculture commodities, create jobs, and grow the economy," explains Jen Wagner-Lahr, AURI senior director for innovation and commercialization. "By better understanding the state of the industry as well as the challenges and opportunities it faces, we can meet that goal."

The analysis will survey Minnesota ag processors during summer 2014. Through the survey, AURI seeks to learn:

- demographics of the ag processing industry;
- business conditions;
- future growth prospects;
- challenges and opportunities; and
- innovation resources needed.

Once AURI has the analysis results, they will first be shared with thought leaders from the ag processing industry and related research and higher education. This group of industry thought leaders will be called on to strengthen the effectiveness of research and commercialization projects AURI leads, in order to have the greatest impact for the industry and the state. ■

Creating vitality in rural Minnesota

Harley Dahl on the Spaeth farm. Photo by Larry Dahl.

BY TERESA SPAETH
AURI EXECUTIVE DIRECTOR

This spring I had the opportunity to attend the inauguration of Southwest Minnesota State University (SMSU) President Connie Gores, the ninth president of the university. I greatly appreciated her address titled "The Prairie. The People. The Possibilities." Many of the points she highlighted hit home with me as being integral to creating vitality in rural Minnesota. Through telling the story of the creation of SMSU, I believe President Gores gave us a roadmap of what it will take to create vitality in rural Minnesota: vision, the right people working together at the right time, and the perseverance that has been a trait of rural Minnesotans since our beginnings.

Vision: SMSU's leaders came together around a common vision—a campus on the prairie that would make it possible for many first-generation college students to further their education without going deep into debt. If we can paint a picture of what rural vitality looks like and why it's important to our state, we can come together to act on that vision and realize the opportunities it presents.

Right people, right time: The community members who helped found the university were not just dreamers, Gores said. "They rolled up their sleeves and got to work." In the same way, we have work to do today to create vitality in rural Minnesota, and each organization and person has a role to play in that. By appreciating and making the most of the strengths and talents of our people—in agriculture, higher education, economic development, and more—we can create momentum and a plan that will get the work done.

For AURI, one of our goals to create rural vitality is to capitalize on the opportunities Minnesota has in agbioscience. Minnesota has tremendous strengths and assets in agriculture and the related biosciences. If we can harness those strengths by supporting our business and entrepreneurs in this industry and giving them the tools they need for success, we can create jobs and economic growth for rural Minnesota.

Perseverance: SMSU's creators got where they got by doing things, not sitting back and planning. We are a hardy people in rural Minnesota. We need to foster action and persevere in the implementation of plans to create a strong future for our children and grandchildren

As President Gores said, "We must capture the spirit of working together for the common good. Let us engage our prairie eye, where we can look at a square foot and see the universe." ■

$68K grant results in $2.4 million in increased revenue

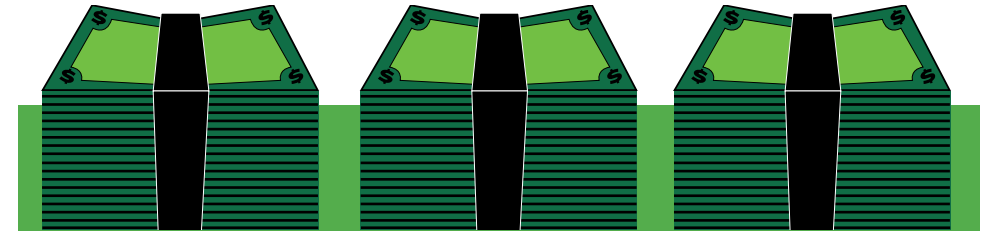
AURI's work with rural cooperatives, thanks to a Rural Cooperative Development Grant from USDA, has resulted in $2.4 million in increased revenue for rural cooperatives in Minnesota.

AURI received the grant for $68,340 in 2013 and matched it with more than $23,000 of its own funds. As a result of these funds, AURI provided services to rural cooperatives including the creation and improvement of products and processes that use agriculture commodities and will result in economic growth and creation. Recently reported results for the year include:

*A direct result of services provided through AURI as a result of USDA's Rural Cooperative Development Grant.

$2,4300,000 in increased revenue for the co-ops*

$310,000 in capital investment



67,774 cooperative members owners served

8 jobs created or retained

AURI'S CORE FOUR QUIZ

How much do you know about AURI's core four areas: food, renewable energy, coproducts, and biobased products? Take the below quiz.

Food Products

Which is the most widely eaten meat in the world?

a. Beef
b. Pork
c. Chicken

Answer: b

Renewable Energy

How many registered flex-fuel vehicles (those that can use regular gasoline and the ethanol blend E-85) are on the road today?

a. 14,562
b. 82,600
c. 14 million

Answer: c

Coproducts

What is torrefaction?

a. A way to recycle cow manure
b. A form of pyrolysis to change the properties of biomass for greater energy value
c. A process to make pellets

Answer: b

Biobased Products

One acre (43,560 square feet) of soybeans can produce how many crayons?

a. 82,368
b. 6,040
c. 2 million

Answer: a

ABOUT AURI

The Agricultural Utilization Research Institute (AURI) helps develop new uses for agricultural products through science and technology, partnering with businesses and entrepreneurs to bring ideas to reality. AURI staff are skilled to walk clients through the entire development journey of bringing a new product or process from idea to reality.

Service Areas: What We Provide

Applied Research and Development

Through practical, applied research we identify emerging opportunities to add value to agriculture products. This information is publicly available in order to help entrepreneurs and businesses generate ideas for new products and processes.

Innovation Networks

When deciding the feasibility of a new product or process, it is critical to have access to industry experts and a science-based network of people. With a broad range of networks, AURI can help bring together the right people at the right time.

Hands-on Scientific Assistance

Scientists are available to provide consulting and technical services in the areas of:

- Product and process development
- Product evaluation and testing
- Sourcing materials, equipment and services

Labs are available to clients for hands-on testing and development.

Learn More

- Contact one of the AURI Offices to speak with a project development director about your business.
- Visit *auri.org* to see the latest research and learn about upcoming events.
- Sign up to receive the *Ag Innovations News* or the AURI electronic newsletter to stay informed about AURI projects and clients.
- Follow AURI on Facebook and Twitter to get notices about new research, upcoming events, where to find AURI at tradeshows and much more.

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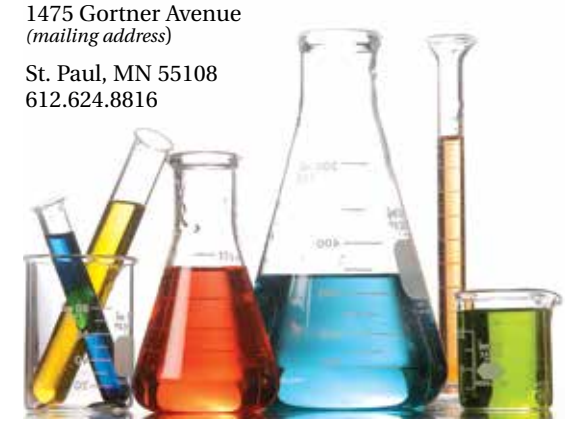

PHOTO BY ROLF HAGBERG

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JUICED-TO-ORDER

Zula Juice makes the healthy lifestyle convenient

BY JONATHAN EISENTHAL

Renee and Tim Peters began juicing as a way to get vital nutrients for their busy family.

For the many Americans who are trying to get fit, running sounds like a great way to get in shape. But running after kids, running errands, and running the laundry machine can be exhausting to many parents and adults—leaving them sapped of the time and energy for good nutrition and true exercise.

It was out of this new parent exhaustion that Renee Peters first discovered her passion for juicing.

"To get all the nutrients I needed when my children were young was challenging," says Peters. "I found that the juicing lifestyle helped me to get more concentrated nutrition. It was also something fun to do, and I could provide it for my children as well."

Peters and her husband, Tim, realized that there was a market of other people who wanted the nutritional benefits of juicing—without the work of doing it themselves and with the promise of good taste. Out of this idea came Zula Juice.

Renee explains that a lot of people will try juicing and they will give up, because they don't get the ingredients right and the taste isn't what they want.

Zula Juice launched its website in October 2013, and began offering the Twin Cities public eight varieties of raw, organic, cold-pressed juices. Bottled in 16-oz, single-serving containers, Zula Juice's offerings include 'Beet Retreat,' 'Carrot Plunge,' and 'Cashew Dream,' among others.

Freshness may be the single most key element that sets their product apart. "All of the juices that are ordered on our web site are juiced-to-order," explains Renee. "We juice it, bottle it, and immediately deliver it to our customer.

"We are passionate about the true juicing lifestyle—getting that juice fresh. The benefits of the juice are highest when the juice is fresh."

Zula Juice offers delivery across the state of Minnesota and free delivery within 15 miles of its commercial kitchen, located in St. Paul, Minnesota (55420).

The Peters went to AURI for nutritional analysis and labeling, which can be a tricky and expensive process for juice products when done by a private lab. In addition, the timing of an analysis is important, because nutrients are highest right when the juice has been pressed.

"There is a taste difference when you have fresh juice," explains AURI's Charan Wadhawan, who assisted the Peters. "There can be a lot more flavor."

Zula Juice's top selling offering is its 'cleanse pack,' for either a one-day or three-day juice cleanse.

"The idea is to give the digestive system a break and flood it with all the phytonutrients and vitamins that are naturally occurring in the juice," says Renee. "You drink six juices all day, and nothing else other than water. There can also be a weight loss benefit, and it can be a jumpstart into a healthier lifestyle. ■

PHOTOS BY ROLF HAGBERG

Zula Juice offers eight varieties of raw, organic, fresh juice through their website: *zulajuice.com*. Delivery is available across the state and is free within 15 miles of zip code 55420 in St. Paul, Minnesota, where Zula Juice's commercial kitchen is located.