



Jul-Sep 2017, Vol. 26, No.3

# Ag Innovation News

The newspaper of the Agricultural Utilization Research Institute

PHOTOS BY ROLF HAGBERG



## The Passionate Professionals

AURI assists entrepreneurs in driving a local food renaissance.

Pages 6-7



Executive Director Column  
Page 2



A Delight for the Senses  
Pages 4-5



AURI's Food Research Lab  
Page 9



Reducing seed treatment dust  
Page 10





BY SHANNON SCHLECHT  
AURI EXECUTIVE DIRECTOR

# Small Steps for AURI Mean Giant Leaps for Minnesota Entrepreneurs

In recent months, the AURI board of directors and senior leadership have undertaken a new strategic plan to increase the organization's impact. One of the most critical steps of the plan is the investigation of ways to enhance and diversify AURI's funding sources, so the organization may better meet the rising demand for its ongoing technical assistance as well as new food and ag innovation services.

The Minnesota Legislature created AURI in the 1980s and has been a trusted and reliable funding partner to the organization and Minnesota's agricultural and food innovators for over 25 years. However, the legislature also placed a duty to the organization to earn and receive revenue from other sources in the statute. AURI leadership is exploring that duty so we can do more to advance the state's food and ag innovation opportunities. To put it another way, by enhancing and diversifying its funding sources AURI can take on more projects that will foster economic benefit for Minnesota through value-added products.

Currently, AURI is not able to serve every client in need. In recent years, AURI had to implement wait lists for assisting clients as demand for the organization's services outpaced its available resources. This means some clients have to wait weeks or months for our assistance. Obviously, this is not conducive to advancing the state's ag and food innovation, which is our goal, especially in the advancement of the state's food and agriculture ecosystems.

However, by taking some initial steps to identify additional funding sources to enhance its revenues, AURI can utilize new funds to build infrastructure, which translates into helping more clients, developing more ideas and doing more to support innovation throughout the state.

AURI's leadership is looking into a number of options, including a partial cost fee-for-service model, retainer contracts with repeat clients, royalty streams on intellectual property development, expanding the number of grants AURI applies for, and since we are a 501(c)3, accepting charitable donations from supporters that see value in AURI's mission (see page 8 for more info).

Over its 28 year history, AURI has worked with hundreds of businesses, organizations and individuals to increase utilization of the state's agricultural products. During that period, the organization has not strayed from its mission and I can say without a doubt that AURI's employees are dedicated and enthusiastic to advancing food and ag innovation across the state. I strongly believe AURI has a bright future ahead of it and these small steps will allow it to be of even greater service to the food and agriculture innovators across Minnesota business.



**Correction:** In the profile of Kay's Naturals on page 9 of AURI's 2016 Annual Report, the final paragraph should have read: Today, Kay's Naturals annual sales are in the seven-figure range, their products are in more than 9,200 stores, and they employ 6-7 people in Clara City, Minnesota.

# Board Spotlight

Q&A with new board member,  
Sen. Rich Draheim and Art Bandli.

BY AURI

This quarter, *Ag Innovation News* is highlighting two of its current board members—recently elected Sen Rich Draheim and current Secretary-Treasurer Art Bandli. Both Directors show a great dedication to AURI and its endeavors, while having unique backgrounds. Hopefully you can see from the side-by-side interviews how diverse opinions and visions for the organization's future work together harmoniously to strengthen AURI.



Sen Rich Draheim

AIN

**What do you feel is your most important duty as an AURI board member?**

The most important duty as a board member is to bring new ideas and a different perspective to enhance the mission of AURI.

RD

**Do you have an agricultural background?**

I worked 20 years for John Deere dealership groups. It really helped me understand a lot about the ag community.

**Tell us about your work on the Senate Ag Committees?**

I worked on getting large animal veterinarians, correcting and amending the buffer law, and promoting the general growth of state agriculture.

**What would you like to see AURI accomplish during your term on the board?**

I would like to see us bring a new innovation to the market that is a game changer in the ag community.

**Do you have a philosophy about the role of the Board of Directors ?**

My philosophy is to bring my unique outsider point of view to the board to keep our ideas diverse and fresh.

**What kinds of projects/initiatives do you feel offer farmers the best opportunities in Minnesota today?**

I am a firm believer that new uses and/or byproducts offer the best opportunities.

**How important is value-added agriculture to Minnesota's economy?**

Value-added ag is very important to the economy and it is very under appreciated.

**What kinds of projects/initiatives do you feel offer the highest value for Minnesota ag producers and processors today?**

I am a fan of expanded markets and new initiatives to help boost interest and output for agriculture.



Art Bandli

AIN

**Have you worked with value-added ag in the past?**

My first involvement with a value added product was Swheat Scoop cat litter. Over 20 years ago, while I served on the Minnesota Wheat Council, secondary wheat was suggested as a possible biodegradable alternative cat litter. Today, it is available throughout the US and many countries worldwide. Certainly a success story!

AB

**What direction do you see value-add ag going over the next 3 years?**

Value added agriculture products will continue to command high interest among entrepreneurs due to the abundance of standard commodities and consumer demands. Adding value to a product can mean many things from utilizing by-products to unique labeling.

**What are your goals as an AURI Board of Directors member?**

My primary goal as an AURI board member is to be knowledgeable about various areas of agriculture and use that knowledge to assess projects that fit the mission of AURI. In addition, I try to increase the visibility and capability of AURI across Minnesota.

**What do you hope to accomplish during time on the Board of Directors?**

AURI is a rather unique organization that utilizes a combination of tax, commodity, and entrepreneur dollars to develop projects. Because of the three funding avenues, it is critical to maintain strong leadership and budgeting. As a board member, I push to support these areas while analyzing projects for approval.

**What kinds of projects/initiatives do you feel have the best opportunities in Minnesota today?**

The four focus areas (Food, Renewable Energy, Biodiesel, & Coproducts) cover a lot of agriculture territory! With new consumer demands in the market, it appears the opportunities in the foo area are heating up. An example could be the Protein Highway interest. The other three areas will continue developing and building on past successes.

**What would you like to see AURI accomplish during your term on the board?**

First and foremost, I have pushed for a unified board that supports the mission with strong Executive Director leadership. Funding is an issue, so I have encouraged support beyond the borders of Minnesota and new sources of revenue. Additional/new revenue is an area that needs continued assessment and support.

**Do you have a philosophy about the role of the Board of Directors?**

My philosophy as a board member is that, in reality, it is the staff who makes the organization successful! My role is to help provide the tools, leadership, and funding to accomplish the tasks they are presented. I am proud to have been involved to help AURI achieve successes.



# A Delight for the Senses

AURI hosts sensory panel to assist clients with product development and marketing.

BY AURI

Offering a unique way for food entrepreneurs to gain expert critique and connect with others, AURI collaborated with Midwest Pantry to hold a Sensory Tasting Event in late March. The event brought together a diverse group of people to evaluate various characteristics of food and beverage selections.

AURI's Innovative Network Program has conducted both formal and informal versions of these events to assist entrepreneurs with consumer preferences related to their specific food or beverage product. This sensory panel was composed of 10 to 12 community members with varying backgrounds. The panelists received instructions on how to evaluate the various food and beverage selections using a defined scorecard with general ratings from 1-5 (like or dislike) on various attributes including appearance, aroma, flavor, and texture. The event also provided a good opportunity for the entrepreneur to network and promote their product.

Serving as the perfect backdrop, the event occurred at Able Seedhouse and Brewery in NE Minneapolis, which is a brewery striving to connect the farm to the brewery. The brewery uses locally farmed grain that is grown specifically for flavor instead of yield, and does its own on-site malting.

Eleven entrepreneurs participated in the March event and are highlighted below.



One of the businesses serving their product was **Darling Foods**, owned by Britt Jungerberg and Sara Doherty. Their product, Darling Pickle Dips, is a line of cream cheese and white bean-based dips that have a different pickled ingredient blended into each flavor. The product line includes four flavors: Original Dill, Original Dill with White Cheddar & Mustard, Spicy Pickle and Roasted Tomato & Jalapeno. Darling Pickle Dips are versatile and fun to use as a traditional dip, spread or base ingredient in other recipes. The pair said, "We appreciated the diverse backgrounds of the panel of judges. It was exciting for us to hear that our product had wide appeal among chefs, food manufacturers, nutritionists and, of course, snack lovers like us. Events like this are extremely important for food start-ups in the infancy stage, like we are because it gave us unbiased feedback from people outside of our family and friend networks."



**Chowza Confections** owner Chris Becker served samples of a delicious sweet treat crafted with gluten-free ingredients. Classic Chowza, our main flavor, is peanut butter and chocolate. A bonus of purchasing this product is that it doesn't involve the typical mess that comes from the making similar snacks at home. Becker said, "I appreciate AURI allowing us to bring in our product for sensory testing. The feedback and conversations with the panel were valuable because we are using that input to improve our product line."



Paula Trenda, Owner of **Curly Girlz Candy, LLC**, offered up for tasting a Sugar Free/No Sugar Added Almond Toffee. Her new line of sugar-free, no sugar added confections is made using a proprietary blend of the natural, high fiber, plant based sugar replacements. Like all of their candies, Paula starts with local Hope Creamery Butter, fresh whipping cream, and always makes them in small batches. Trenda said "The AURI Tasting Event was a great way to get industry experts and food lovers to try our new product, providing valuable feedback for some minor tweaks and changes before we launch our sugar-free toffee."



Matt Howard of **King's Table Jelly**, had samples of his reduced sugar jelly made from cold-hardy grapes grown in Chisago Lakes, MN. He advertises that it has 40 percent less sugar than traditional Welch's jelly and is bursting with natural grape flavor. Howard said "The sensory event gave me a chance to have my product evaluated by professionals and to receive valuable feedback. I'm so glad I went because they helped steer me towards the right blend of grapes that will meet the consumer's taste needs."



Sharab Shrubs founder, Alex Zweber addresses the judges and describes his vinegar-based drink at AURI's recent sensory panel event.



**Karmic Kitchens** owner Sarah Pritzker had samples for a snack called Lotus Pops made from the popped seed from the Lotus flower. Similar in taste to popcorn but lower in calories, Lotus Pops are nutrient dense with high amino acid content and magnesium. They use simple, easy to understand ingredients and currently make four flavors: Maple Caramel, Chocolate Sea Salt, Truffle Salt and Original (Himalayan Pink Salt and Olive Oil). Pritzker said, "the event was a great way to get in front of and receive advice from people who have so much experience in the food world."



Sunil Kumar, owner of **The Amazing Chickpea**, offered for critique his Amazing Chickpea Butter Spread. Kumar said "It is not only delicious and nutritious, but it is also made locally in Minnesota, is low-fat, high in iron, high in fiber and contains 0% peanuts. We currently have three different flavors: creamy, crunchy, and Chocolate (Choc' A Chic) Chocolatey Chickpea Spread, with all natural cocoa!"



Andrew Healy, Cofounder of **Get Bizzy Inc.**, had samples of what he calls "nature's most trusted form of energy." Using an ultra-convenient format and a strong cold-brewing process, Healy says "Bizzy Coffee Shots are there for you when your busy life gets in the way of brewing or waiting in line for coffee." About the event, he said "This was a great event with a lot of great products. It was fun to hear the feedback of so many people in the food industry."



Angela Gustafson, Owner of **Gustola Granola**, offered 'Gusto' Bars, which she described as "healthy, delicious energy anytime." Organic oats, local peanut butter, local Bare Honey, and local K'ul Chocolate are among the all-pronounceable, all-recognizable ingredients. She said, "I love how AURI puts an element of fun into their very technical and professional contributions to our agriculture/food community! Having the opportunity to get immediate, thoughtful feedback from a local chef on the panel that I admire tremendously was a rare opportunity."



Minnesota State Representative Ilman Omar (second from right), with AURI's Dan Skogen, Nan Larson and Shannon Schlecht, provided unique insight as a judge of the sensory event.



**Spice Kitchen, LLC**, owned by Kayla Yang-Best, had samples of her Pho product, which she describes as "a savory and hearty rice noodle soup that originated from Southeast Asia, and made popular in the U.S. through the growth of Vietnamese cuisine. Pho has four parts: rice noodles, steaming hot broth made from beef or chicken bones, toppings of fresh herbs and vegetables, and condiments that are sweet or spicy" Yang-Best also said "the event was a lot of fun! The panel asked great questions and provided valuable feedback for my product."



Alex Zweber, owner of **Sharab Shrubs**, makes cold-press drinking vinegars by utilizing traditional methods to create flavorful mixes for the bar and home. Some flavors include apple rosemary, Asian pear, and strawberry. He offered up a tasty sample mixed with seltzer water for the judges to evaluate.



On the sweet side, Michele Zoromski, "Chief Memory Maker", **Northern Frost**, describes her product as follows: "Perfect for your celebration or event. Creamy and delicious, we pair light, not too sweet frosting, in a variety of flavor combinations for a tasty, fun treat that everyone will love." Zoromski also said, "AURI is great to work with. Knowledgeable and friendly, it's wonderful to be able to leverage their expertise to make my products better. The sensory event was a fun opportunity to introduce my products to the food community and get immediate feedback."

AURI Food Scientist Lolly Occhino, said "The AURI sensory event was a great opportunity for the food entrepreneurs to get some valuable feedback and comments on their products in addition to offering great chance to network with others in the food community."

Sensory Tasting Events are an offering of AURI's Innovation Network Program (INP). The purpose of the INP is to actively engage thought leaders, business and industry, commodity groups, stakeholders and academia to accomplish AURI's value-added mission. The outcome sought is improved competitiveness of businesses and entrepreneurs through ongoing, purposeful connection of resources and partners along the value chain and increased knowledge of opportunities, technologies and trends. For more information, please contact Nan Larson at 507-537-6020.

Established in 2010 by food creators Zoie Glass and Chad Gillard, Midwest Pantry is a member organization formalizing the local food creator community to make Minnesota the #1 place to start and run a food business. The organization has worked with over 350 local food and gift-producing companies to increase sales through educational, wholesale, and retail opportunities.

## THE JUDGES

At a food sensory event, like this one, the judges are just as important to the occasion as the participating entrepreneurs. The judges provide objective, actionable feedback to food business owners, so they can take steps to adjust the formulation of their products, or learn about the elements that should be the focus of promotional materials. The judges for this event were:

Kevin Halgrimson	Lucille's Kitchen Garden, Product Innovation Lead
Blair Mowery	AmeriTech/Axiom
Brian Erickson	MDA
Sue Doeden	MN Food Writer
Kristin Schwake	CHS
Randy Schwake	Choice Grain, LLC
Christina Connelly	Protein Highway Initiative
Brenda Langton	Chef, Author, Restaurateur
Representative Ilman Omar	Minnesota State Representative
Marshall Masko	AmeriTech/Axiom
Randy Hilliard	AURI
Nan Larson	AURI
Michael Stutelberg	AURI

## IN THEIR OWN WORDS

Blair Mowery, Partner in AmeriTech Inc. also served as a judge and said "This event highlights the importance of supporting the ag based industry in Minnesota by allowing these motivated entrepreneurs to come up with new food products building on commodities from this state. The event showed the creativity and commitment to building a biz in Minnesota. AURI should be aggressive about continuing to support these kinds of activities that allow new ideas to get exposed to a broader audience."

Another judge, Kristi Schwake, who is a consultant for a large food business, said "I had never participated in a sensory tasting event before, but being on the panel of judges was such a great experience. Not only was I served a 12-course meal, but I was able to wash it down with a beer, meet some hardworking and inspiring people and contribute in a small way to these entrepreneurs' success! It was a wonderful and FUN evening of learning, sharing and growing."

Sue Doeden, Food Writer with Sharing Good Food For Good Life, was among those serving as a judge. She said about the event "Such a fun, unique way to support and educate small, local food developers as they work to bring their new products to market. As a public event, it's a wonderful way to bring awareness to some of Minnesota's food entrepreneurs and our state's agricultural products. Serving on the sensory panel, surrounded by positive and passionate entrepreneurs, was an energizing experience. Spending time with other professionals on the panel was icing on the cake!"



# The Passionate Professionals

Food Industry Veterans Bring Passion and Expertise to Minnesota's Food Renaissance

BY DAN LEMKE

Food is a necessity for everyone, but for some it is a passion and a way of life, recognizing it as an opportunity. AURI is currently assisting a wide range of entrepreneurs, including trained chefs and food industry professionals who are using their knowledge and passion to help drive a local food renaissance.

“We are seeing an explosion of food entrepreneurs.”

**Lolly Occhino,**  
food and nutrition  
scientist for AURI.



Puros Pies

Brian Sadowski, owner of Puros Pies, and his wife moved from California to Minneapolis more than 15 years ago. He attended culinary school, then worked at various kitchens in the Twin Cities metro area to get as much hands-on experience as he could. Sadowski landed a job with Panera Bread, training store bakers and ensuring that bread in about a dozen Midwest restaurants met the company's quality standards. The overnight schedule got to be too much for him and his young family, so he went back to school, earning a food science degree from Kansas State University. He then became a corporate chef for a Twin Cities food company. About three years ago, he moved from the kitchen into product research and development.

Sadowski's broad experience and goal to eat healthy led to the development of Puros Pies. Unlike grandma's super-sized pies, Puros Pies are portable, similar to a yogurt cup, but they still feature a crust and filling. The pies come in several flavors including chocolate espresso, strawberry and curry carrot.

“We try to watch what we eat because we want to eat healthy,” Sadowski says. “It was a lot easier to find clean savory products than it was to find sweets. We decided to do our own because we recognized there was a gap in the market.”

Sadowski says Puros Pies are gluten-free, dairy-free and contain some organic ingredients. But that's not what he hopes captures people's attention.

“It has to taste good or people won't eat it,” Sadowski contends.

Sadowski says he's been working with local resources, including AURI, to help get the products tested and ready for market.

“We are just getting started, but we feel good about where we are at and having resources like AURI helps,” Sadowski says.



Brian Sadowski, owner of Puros Pies, and his wife moved from California to Minneapolis more than 15 years ago.



Puros Pies are portable, similar to a yogurt cup, but they still feature a crust and filling.



Puros Pies are gluten-free, dairy-free and contain some organic ingredients.



Bee Free Honee

## A Tasty Mistake

Katie Sanchez wanted to be a pastry chef. She left her Mound, Minnesota, home to attend the Culinary Arts Institute of Louisiana. After graduating, she moved back to Minneapolis with the goal of putting her newly-earned degree to work. She worked as a line cook, then became an assistant pastry chef. She worked under several sous chefs before becoming pastry chef at Whole Foods' St. Paul bake house.

After her son was born prematurely, his care demands made it impossible to continue as a pastry chef, but it opened an entrepreneurial window.

In her younger years, Sanchez' family had an apple orchard and her father kept bees. Sanchez had tried to make apple jelly, but failed. Years later when reading about bee colony collapse, she remembered her mistake, which gave rise to Bee Free Honee, a vegan sweetener Sanchez has been marketing since 2011.



Bee Free Honee has the consistency of bee honey, but is made with 80 percent organic apple juice, lemon juice and cane sugar. From that original honey replacement, Sanchez has developed a line of flavored products including Ancho Chile, Slippery Elm, Mint and even a new flower pollen infused Bee Free Honee, which is nutritionally the same as raw bee honey.



Bee Free Honee is made with 80 percent organic apple juice, lemon juice and cane sugar.

“I wanted a lighter sweetener for vegan markets because there were few options,” Sanchez says. “I wanted something that wouldn't mask the flavors of the other ingredients. I realized I could make a product that would be my gift to my fellow vegan bakers.”

Sanchez says AURI provided technical assistance on ingredient sourcing, co-packing and nutrition labeling. Bee Free Honee was available in three Twin Cities outlets when it first hit the market five years ago. Now it's in more than 2,000 stores nationwide.



Bee Free Honee is currently available in more than 2,000 outlets.



Chloe Vegan Pizzas

## On a Mission

Augie and Wendy Hinnenkamp's motivation for developing a new food product was a bit more personal. Their daughter Chloe suffers from severe eosinophilic esophagitis, a condition of the esophagus that can cause a life-threatening allergic reaction to everyday foods. Augie Hinnenkamp, who has more than 20 years of experience working in food and consumer packaging, partnered with locally acclaimed chef, Robert Velarde to develop Chloe Vegan Pizzas.



Chloe Vegan Pizzas come in six flavors, including margarita and taco.

“We started with pizza because everyone likes pizza,” Augie Hinnenkamp says.

Hinnenkamp says perfecting a vegan cheese that melts and stretches like dairy cheese has been a challenge. He says the vegan crust and sauce were relatively simple to make, but they tested more than 500 variations of vegan cheese before developing a winner.

AURI technical staff have been involved with the cheese development, which could lead to new market opportunities beyond pizza topping.



Wendy Hinnenkamp and Chef Velarde show there is room for innovation in even the simplest of foods.



The Hinnenkamps pride themselves on using the finest locally sourced, organic, non-GMO ingredients available.

“We wanted to have the best tasting vegan pizza and cheese in the market, period,” Hinnenkamp says. “I think we nailed it.”

Chloe Vegan Pizzas come in six flavors, including margarita, mediterranean, campfire vegetable and alfredo. Those are just the beginning as new products, including pasta, are in the works.

## Changing Times

These and other food entrepreneurs are finding a warmer market reception than ever before.

“We are seeing an explosion of food entrepreneurs,” says Lolly Occhino, food and nutrition scientist for AURI. “We hear of the Twin Cities becoming the Silicon Valley of food. It is a hub for entrepreneurs because there is a lot of support for them which helps fuel the movement.”

Occhino says part of the reason food entrepreneurs are finding success in the marketplace is a growing desire by consumers to eat more healthy, local foods. Many people also want clean labels that contain simple, natural ingredients.

“Clean labels go hand in hand with consumers' desire to eat more local foods,” Occhino adds. “It's appealing to purchase something that been grown locally.”

Occhino says getting an audience with food buyers from retail outlets is much different for small, entrepreneurial food companies than it was a decade ago. She says many stores are looking to stock their shelves with local products because that's what consumers want. That market-pull benefits small companies trying to make their mark.

“I lived in California and I've traveled to the East Coast, so I used to think that's where trends started,” Sadowski says, “but from what I've seen, people here are very in tune with their food. This area has been very supportive of local foods.”

Smaller food companies and entrepreneurs are taking market share and shelf space from larger food processors in part because they can react more quickly to consumer's changing tastes.

“I feel we are on trend,” Hinnenkamp says. “We're at a crossroads because Consumers are educated and they want to understand the ingredients they're seeing on the label. They want farm to table.”

“It used to be a few companies dominated the food industry,” Sanchez says. “Now you can go in to a grocery store and get almost anything that's been made in a small batch. Smaller companies saw an opportunity and jumped in because consumers want transparency in food.”

Transparency may drive some demand, but consumers will ultimately decide which products survive.

“It may be easier to get in front of someone than it was a decade ago, but you still have to move units,” Sadowski says.



# Donate Today!

Show your support  
for Minnesota's  
value-added  
agriculture sector by  
donating to AURI.



As you may have read in the Executive Director's column, AURI is taking steps to strengthen the organization's service offerings to Minnesota farmers, entrepreneurs and businesses by increasing and diversifying its funding sources. With the needs of those whom the organization helps surpassing its available resources, AURI decided to explore new alternatives to support the innovative ideas that exist across Minnesota.

One of the best options to help address this need is to accept tax-deductible charitable donations from organizations and individuals who support AURI's mission. Donations will support resources to advance innovation in AURI's focus areas: Food, Biobased Products, Renewable Energy and Coproducts. "The end result will be more education, technical assistance, and awareness to bring new products and processes to market than before, enhanced R&D efforts and ultimately a greater benefit to Minnesota's economy," said AURI Executive Director Shannon Schlecht.

To make the process as simple as possible, AURI plans to enlist the help of an online fundraising platform to make it easy for AURI's supporters to donate to the organization. Supporters, partners and past clients can now help support AURI's mission and play a meaningful role in its many worthwhile endeavors to advance innovative food and agricultural ideas. "We're embracing this technology because it ensures more of the donation goes directly to advancing innovation and less to administrative costs," said Schlecht.

AURI plans to have its online donation platform in place by the end of the summer, but in the meantime supporters can also mail a contribution to AURI's Crookston office, located at 510 County Road 71, Suite 120, Crookston, MN 56716.

AURI hopes you will consider supporting its work to bolster food and agricultural innovation in Minnesota by making a donation today. Your tax-deductible contribution will help make a meaningful difference to the state's producers, small businesses and entrepreneurs as AURI is able to add resources to further educate, train and provide technical assistance to individuals from north to south and east to west. This, in turn, will further utilization of the state's commodities and to advance innovative new uses and value added products across Minnesota and the region.

## AURI Finds Success with First-Ever Ag Innovation Forum

BY AURI

Earlier this year on March 21, AURI hosted its first-ever New Uses Innovation Forum. The event brought together expert voices from throughout the upper Midwest's value-added agricultural sector. If you weren't able to attend this year's forum, the Director of Grow North Minnesota Lauren Mehler Pradhan offers a great overview. She said, "The New Uses Forum gave the community an opportunity to see what is exciting about Minnesota's agricultural ecosystem. The collaboration, the sense of community and the drive for innovation was apparent in each of the sessions. I think now is the time for Minnesota to truly capitalize on this energy and take it to the next level."

The event opened with a hearty welcome from AURI's Executive Director, Shannon Schlecht and Minnesota's Department of Agriculture Commissioner David Frederickson, who shared his thoughts on Minnesota's value-added agricultural sector and its importance to the state.

From there the day took off with many interesting and passionate discussions of the various topics that affect innovation and value added agriculture within Minnesota today. The topics ranged from Minnesota's value-added agriculture sector to the state's agbioeconomy to experiences of successful entrepreneurs. GreenSeam Director, Sam Ziegler, was part of the agbioeconomy panel and said, "the forum provided a platform for everyone involved or interested in new uses to learn, connect and share ideas. It was impressive to see such a diverse mix of individuals ranging from entrepreneurs to legislators to business executives all with the same outcome in mind, which was to find ways to add value to the products we grow in the state."



AURI New Uses Innovation Forum panel discusses ag and food investment opportunities

The event also brought together a number of professionals to discuss ag and food investment opportunities in Minnesota. This panel was of special interest to entrepreneurs and innovators looking to overcome one of the most common challenges to innovation—funding. Panelists believed financing and collaboration ideas were both significant takeaways for attendees. "I felt the conference was most useful in highlighting the importance of collaboration in accomplishing economic development goals," said Tim Penny, the President and CEO of the Southern Minnesota Initiative Foundation. I have always subscribed to the theory that the sum can be greater than the parts. And, this is especially true on the local foods, entrepreneur work that we have undertaken in partnership with others in our southern Minnesota region. "

Similar to collaboration, one of the best takeaways panelists and attendees identified at AURI's New Uses Innovation Forum was the ability to network and connect with other professionals, entrepreneurs and legislators. AgStar Financial Services' Aaron Knewtson put it best when he said, "I found the event to be a great cross section of Minnesota agriculture, and I made many new connections including those who challenged us to think more broadly about Minnesota food and agribusiness. Not only were the professional connections important, but the ideas shared and introduced were extremely beneficial."

In the end, the event proved to be an asset to all who attended, giving them new tools and resources to take back to their organizations, businesses and institutions of higher learning. Based on the feedback from attendees, AURI believes the New Uses Innovation Forum was a success and plans to offer more events like it in the future to bolster Minnesota's value-added agriculture sector.

### AURI FACILITY PROFILE

## Food research and development lab

Located in AURI's Marshall Facilities on the Southwest Minnesota State University campus, the food research and development lab is a unique resource for entrepreneurs and small food businesses throughout Minnesota. The goal of AURI's Food Focus Area is to support the organization's mission: to foster long-term economic benefit for Minnesota through value added agricultural products. AURI's Food Focus area partners with food businesses and entrepreneurs to bring ideas to reality. It provides a broad range of services including hands-on technical assistance, and a targeted network of resources to assist in the development of value added products created from Minnesota based crops/ingredients.

### What is unique about AURI's work in the food area?

AURI works one on one with food clients with flexible assistance to meet their needs. Services range from answering a few technical questions for a client to working with them at their commercial kitchen space to improve their product or process. Food lab staff also work closely with AURI's Project Development team to offer resources on the sourcing, marketing and other business needs.

### What are the capabilities of the Food/Meat Lab?

AURI has a food and meat lab facility located in Marshall, Minnesota. The lab is equipped with the basic equipment needed to make small batches of many types of food products. In addition, we have the capability to do processing, cooking and packaging of meat based products. We intend to add the capability to do sensory testing soon.

### Marshall Facility

1501 State Street  
Marshall, MN 56258  
507-537-7440



### The Amazing Chickpea

The client is making a line of chickpea butter spreads, somewhat similar to peanut butter but using chickpeas as the base so the spread offers a similar nutrition profile to peanut butter but with no allergens. AURI provided some technical consulting and hands on work to resolve product issues and help optimize the formula in order to get the best texture and flavor.

### Lotus Pops

Lotus Pops have a texture similar to popcorn but are lower in calories and are nutrient dense. AURI provided technical assistance to the client in several areas including product stability assessment and nutritional analysis.

### Lou Lou Foods

The client makes a line of protein and energy bars targeted to athletes and plans to distribute them at athletic clubs. AURI worked closely with the client to assess the stability of her starting recipes/formulas, working through several rounds of revisions in order to get the moisture level of the bars to an acceptable level for safe, ambient distribution.

### King's Table Grape Jelly

The client makes a reduced sugar jelly made from cold-hardy grapes grown in Chisago Lakes, Minnesota. AURI worked with the client to obtain the needed information in order to create a nutrition facts label for the product.

### Spice Kitchen

The client has a line of Pho kits at retail that are shelf stable and contain the needed flavoring ingredients and noodles in order to make Pho at home. AURI provided coaching and mentoring throughout the product development process, food safety and regulatory guidance, and connections to other resources and networks within the local food system.

If you have a food project and would like to learn how AURI can help you, contact us via [auri.org](http://auri.org).



# Dust busters

BY ALAN DOERING, CO-PRODUCTS SCIENTIST

AURI’s “dust-busters” are looking for ways to get rid of nuisance dust from seed treatments.

Many crop seeds are planted with a thin, multi-layer coating of pesticides, called a seed treatment. Seed treatments protect young plants from fungal diseases and early-season insect pests. For many Minnesota crops — corn, soybeans, cereal grains, potatoes — seed treatments are essential for good yields. Seed treatments can also cut the need for later foliar pesticide applications.

Sometimes, though, particles of the protective seed coating rub off and release into the air during handling and planting. This abraded dust contains pesticides that could be harmful to non-targeted and beneficial insects, like honeybees.

Now, the widespread use of seed treatments has become a significant environmental issue and the Minnesota Department of Agriculture is proposing to regulate seeds treated with pesticides for the first time.

## Innovation offers solutions

The good news is, there’s lots of innovation aimed at reducing unwanted dust from treated seeds. Less dust means less risk of unintentional environmental presence. AURI recognizes this and is working on solutions to this dusty problem — solutions that incorporate agricultural co-products.

For example, AURI helped a Forest Lake company, Micro-Carriers, develop and test a low-dust seed treatment for potato seed pieces. (Commercial potato crops propagate vegetatively from pieces of cut-up potatoes.) A main ingredient in the patented seed treatment is ground sunflower hulls.

## AURI working to reduce seed treatment dust



In tests performed by the USDA Agricultural Research Service, this seed treatment cut dust emissions by an astonishing 89 percent.

In tests performed by the USDA Agricultural Research Service, this seed treatment cut dust emissions in potato seed cutting sheds by an astonishing 89 percent, compared to standard potato seed treatments. The new seed dressing formula, which is now ready for commercialization, can also carry pesticides for several other types of seeds.

## Keeping seed treatments in place

Another potential problem with seed treatments is leaching of mobile chemicals into groundwater. For instance, a 2016 report from the Minnesota Department of Agriculture reports that plants absorb less than 20 percent of the active ingredient in neonicotinoid insecticide seed dressings. The remainder enters the soil, where it is susceptible to loss.

AURI is working on ways to hold the active ingredients in seed treatments within the root zone. One promising idea is to incorporate biomass char in the seed coating.

Production of char comes from heating an organic material, such as sugar beet pulp, wheat straw or manure, in the absence of oxygen. Char is an excellent material for soaking up oil and odors, and it is used in the oil drilling industry and as an additive in poultry litter. Char Energy in Ada makes equipment for commercial bio-char production.

There is evidence that blending biomass char into seed treatments could curb the movement of chemicals in the soil. AURI plans to collaborate with the USDA-ARS to test this hypothesis.

AURI research is exploring more effective seed treatment solutions. That’s good for farmers, good for agriculture, and good for our environment.

## ELSEWHERE IN AG INNOVATIONS

BY AURI Editor’s note: As a service to our readers, we provide news about the work of others in ag utilization. Often, research done elsewhere complements AURI’s work.



## Biobased is the Future of Footwear

Popular shoe brand, Reebok, plans to bring footwear made from corn and organic cotton to the market later this year. The new shoes, which will use cotton on the upper portion and a base originating from field corn, will be the launch product for its new Cotton + Corn initiative.

Head of Reebok Future Bill McInnis says this is just the first step in using materials that grow and are renewable, rather than the petroleum-based materials commonly used today. He adds the bio-based footwear is compostable after use.

The shoe and apparel company is collaborating with DuPont Tate & Lyle Bio Products to manufacture a pure, petroleum-free, non-toxic, 100 percent USDA certified bio-based product derived from field corn.

Reebok president Matt O’Toole says their philosophy is to be more human, and sustainability is a core part of that belief.



## The bionic leaf

One of the largest global problems of the future will befeeding the world’s growing population To help address the challenge, researchers have presented a ‘bionic’ leaf that uses bacteria, sunlight, water and air to make fertilizer in the very soil where crops are grown.

The artificial leaf is a device that, when exposed to sunlight, mimics a natural leaf by splitting water into hydrogen and oxygen. It then pairs the water-splitting catalyst with the bacteria Ralstonia eutropha, which consumes hydrogen and takes carbon dioxide out of the air to make liquid fuel. The new system provided biomass and liquid fuel yields that greatly exceeded that from natural photosynthesis.

“The fuels were just the first step,” Nocera says. “Getting to that point showed that you can have a renewable chemical synthesis platform. Now we are demonstrating the generality of it by having another type of bacteria take nitrogen out of the atmosphere to make fertilizer.”

The proof of efficacy is in the radishes—the researchers have used their approach to grow five crop cycles. The vegetables receiving the bionic-leaf-derived fertilizer weigh 150 percent more than the control crops. The next step, Nocera says, is to boost throughput so that one day, farmers in India or sub-Saharan Africa can produce their own fertilizer.



## Fly Farms to Provide Alternative Protein for Animal Feeds

Two companies, AgriProtein and Christof Industries, partnered to build up to 25 fly farms a year up-cycling organic waste into insect protein for animal feeds. The partnership will help bring insect protein into the mainstream of feeds used in aquaculture, poultry farming and pet food. Together the companies have developed a high-tech blueprint for 100 factories by 2024 for AgAgriProtein to rear fly larvae at an industrial scale on organic waste that would otherwise go to landfills. It then harvests the larvae to make natural, high-protein feed products as a sustainable alternative to fishmeal and soybean meal. The fly farms will be operated by local licensees of AgriProtein technology in Asia, the Middle East, Europe and the Americas. AgriProtein CEO Jason Drew said, “Waste-to-nutrient technology is starting to get traction and price per ton is key in the fight to replace fishmeal.

## AURI’S FOCUS AREAS QUIZ

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

Food Products	Renewable Energy	Coproducts	Biobased Products
<p><b>The consumer-driven trend of replacing synthetic-sounding ingredients with natural options is called.</b></p> <p>a. NatureOne b. Clean Labeling c. Back to Basics d. Pure Nature</p>	<p><b>Biomass can be used for both heating and cooling:</b></p> <p>True False</p>	<p><b>Glycerin is a byproduct of what type of production?</b></p> <p>a. Ethanol b. Milk c. Corn syrup d. Biodiesel</p>	<p><b>Swheat Scoop is a product made from what biobased ingredients?</b></p> <p>a. Soybeans b. Wheat c. Corn d. Chickpeas</p>
Answer: b	Answer : True	Answer : d	Answer: b

## 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 at walking clients through the entire development journey of bringing a new product or process from idea to reality.

## Service Areas: What AURI Provides

### Applied Research

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.

### 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

## 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 to help bring new products and processes to market.

## Learn More

- Contact one of the AURI Offices to speak with a project development director about your business.
- Visit [auri.org](http://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.

Join the conversation on Facebook at [AgriculturalUtilizationResearchInstitute](https://www.facebook.com/AgriculturalUtilizationResearchInstitute)

Follow us on Twitter at @AURIcomm

## Contact Us

[auri.org](http://auri.org)

**Crookston**  
510 County Road 71  
Suite 120  
Crookston, MN 56716  
800.279.5010

**St. Paul**  
U of M Biological Sciences Center  
1445 Gortner Avenue  
(physical address)  
1475 Gortner Avenue  
(mailing address)

St. Paul, MN 55108  
612.624.6055

**Marshall**  
1501 State Street  
Marshall, MN 56258  
507.537.7440

**Waseca**  
PO Box 251  
Waseca, MN 56093  
507.835.8990



PHOTO BY ROLF HAGBERG



# A Field Day for All

## Biomass Heating of Chicken Barns in Minnesota

BY AURI

On May 19th individuals from renewable energy groups, poultry growers, and political offices gathered in Albany, MN to learn the preliminary results from a 23-month study on biomass heating in broiler chicken broiler barns. The event marked a new milestone in a nearly two-year collaboration between AURI, Minnesota's Clean Energy Resource Teams (CERTS) and Minnesota poultry farmer, Bill Koenig of Viking Company.

During the presentation, Fritz Ebinger presented the results of the study, which included the use of a 1.6 million BTU forced air furnace to heat the barn for raising 12 flocks (so far) of chickens at Koenig's Viking, MN farm. He presented a number of significant results from the study, like fuel cost savings, ash efficiency, and flock characteristics (i.e. health, feed conversion, weight and effective cost). Also shared was financing options that helped Koenig fund the conversation of his barn to thermal heat namely a Minnesota Department of Agriculture (MDA) NextGen Energy grant and a USDA Rural Energy for America Program (REAP) grant.

Following Ebinger's presentation was a presentation by AURI's Senior Scientist-Coproductions, Alan Doering, on Biomass Opportunities for Agricultural Operations - Feed, Fuel, and Bedding. In it, he discussed AURI's services and its coproduct utilization lab.



Koenig invited attendees to see the biomass furnace first-hand by visiting his farm, where, he gave the group a detailed tour of facility.

He also discussed the many value-added biomass opportunities in Minnesota, including hydro-seeding mulch development, biofilter media and biomass solid fuels. Many of which relate to recent AURI projects, including Koenig's utilization of biomass for thermal requirements. Following the two presentations, Koenig invited attendees to see the biomass furnace first-hand by visiting his farm. There, he gave the group a detailed tour of his facility where the furnace operates; showing them nearly every step of the process from delivery of wood into the system, transit of wood fuel into the burner and finally the combustion chamber that creates the heat for the chicken broiler barn. Koenig also spent time answering many practical questions that ranged from maintenance challenges to fuel price comparisons to recommendations on where to obtain sustainable quantities of biomass to use in the furnace. During the discussion, Koenig also told the group that his experience with biomass heating has been so positive that he plans to convert his other poultry barn as well.

Based on the questions and conversation had during the presentation and the tour, there was a high level of interest in this project, especially its outcomes, which is good news for Minnesota's renewable energy and coproduct sectors.

Non-profit  
Organization  
U.S. Postage  
**PAID**  
Permit No. 14  
Detroit Lakes,  
MN 56501

 **AG INNOVATION NEWS**  
The newspaper of the Agricultural Utilization Research Institute  
510 County Road 71  
Suite 120  
Crookston, MN 56716  
*Change Service Requested*