



Ag Innovation News

Oct-Dec 2018, Vol. 27, No.4

The newspaper of the Agricultural Utilization Research Institute

FROM FARM



TO SCHOOL



Pages 6-7



Board Spotlight
Page 3



Food Ag Ideas Week
Page 5



Up Close with Tera Johnson
Page 8-9

Fermentable
Oligosaccharides
Disaccharides
Monosaccharides
And
Polyols

FODMAPs are Important
Page 10



Discussion to Direction

BY SHANNON SCHLECHT
AURI EXECUTIVE DIRECTOR

“

AURI staff use this
opportunity to explore
potential ways of
collaborating and
leveraging resources
to foster continued
innovation

”

In order for AURI to best serve the state, it's important to have a wide perspective and understanding of the issues facing Minnesota's agricultural industry. This includes identifying areas of opportunity, gaps in knowledge or services, challenges faced today and potential future constraints, and opportunities for synergy and collaboration. These are all important things to know because they can help identify shared areas of interest that shape AURI's future endeavors and partnerships.

This is why AURI reaches out to several stakeholder groups every other year to discuss the state of the industry. The process involves AURI staff meeting face-to-face with representatives from agribusinesses, farm organizations, research and promotion councils, government and academia to discuss each organization's priority issues, emerging innovation opportunities, trends and unique challenges. AURI staff also use these meetings to explore potential ways of collaborating and leveraging resources to foster continued innovation.

These are necessary conversations because it encourages everyone to be open and honest about critical components and issues facing their business and industry and it broadens the conversations to different perspectives and possible solutions.

The end result is an analysis detailing AURI learnings from the stakeholder interviews. In the past, this included highlighting gaps in knowledge, identifying synergies that could improve industry innovations and setting AURI's public research initiatives that encompass both the broadest audience of identified needs as well as those that have commercialization opportunities. I expect the upcoming stakeholder analysis will provide similar, useful insights.

Once completed, AURI plans to share themes of the analysis with our stakeholders. In this way, we can continue to work together for the good of innovation throughout the state.

So, with that, I encourage you to participate in this meaningful endeavor if you are contacted by AURI as it could help shape the next big opportunity in value-added agriculture to benefit Minnesota and the agricultural industry.

Board Spotlight

Q&A with board member,
Kenneth Asp.



BY AURI

This edition of Ag Innovation News brings you an interview with one of AURI's newest board members, Kenneth Asp. He brings a wealth of knowledge on wheat and modern farm practices to the organization. If you'd like to learn more about Director Asp, visit the Board of Directors page at auri.org.

AIN

Which agricultural group do you represent?

I represent the state's wheat growers.

KA

AIN

Please give us some highlights around your ag background.

KA

I grew up on a family farm west of Thief River Falls in Pennington County, graduated from the Aviation Mechanics Program at the Thief River Falls Area Vocational Technical Institute and served 4 years in the Navy before graduating from the University of Minnesota Crookston with a degree in Agricultural Aviation and began farming independently - wheat and field crops - in 1982.

In 1992 I was elected to the Pennington County Farm Service Agency Committee and served until 2004; including 4 years as Chair. Starting in 2002, I was elected to the Minnesota Wheat Research and Promotion Council and served 12 years, including 2 years as Chair and 4 years on the Research and Audit Committees for US Wheat Associates.

AIN

What direction do you see value-added agriculture going during the next 3 years?

KA

In the immediate future, I see value-added agriculture continuing to grow the fields of medicine - essentially nutrition - and fuel: biodiesel, ethanol and electricity. That includes alternative ag products and efficiencies, like utilizing products that would otherwise go to waste.

AIN

What do you hope to accomplish during your time on the board?

KA

Greater name recognition, more prominence for wheat products and by-products and enhancing its footprint in the Red River Valley and Northwest Minnesota - those are all areas I am interested in promoting on AURI.

AIN

What are some of AURI's greatest accomplishments in recent years?

KA

The New Uses Forum last spring highlighted several small companies that got their start by utilizing business plans facilitated by AURI and I see that as our greatest strength. Taking ideas off the drawing board and turning them into a tangible enterprise that creates new uses for ag products and adds to consumption.

AIN

As a leader of AURI, what kind of future collaborations would you like to see the organization undertake?

KA

I have been impressed by the ability of AURI to facilitate collaboration between industry, education and good, old fashioned "Yankee Ingenuity." In Northwest Minnesota we have seen manufacturing grow from the smallest concept--businesses like Arctic Cat, Polaris, DigiKey and Central Boiler. I would like to see AURI be that same kind of incubator for value-added agriculture.

AIN

What do you see as the AURI Board of Directors' greatest strength as a group?

KA

As a group: diversity is the greatest strength of AURI - and the ability to set aside the interests of any one group to find a way to benefit the whole.

AIN

Looking forward, what role do you see the Board of Directors playing in the success of AURI?

KA

The Board of Directors is AURI - it is up to the Board to see the staff has the tools and guidance they need to fulfill the mission statement of the Agricultural Utilization and Research Institute.



The Quest to Optimize Denitrifying Bioreactor Performance with Agricultural Residue-Based Filter Media

BY AURI

One of the most important issues faced by farmers and ag producers is that of nitrogen runoff from their fields into the surface water supply via tile drainage systems. This runoff of nitrogen has a negative effect on water quality, and contributes to a hypoxic zone in the Gulf of Mexico. However, a new study shows a denitrifying bioreactor is a practical, cost effective way to reduce the nitrate levels in water runoff from agricultural fields.

The Agricultural Utilization Research Institute (AURI), in partnership with USDA-Agricultural Research Service (USDA-ARS), Minnesota Corn Research & Promotion Council (MCRPC) and the University of Minnesota (U of M) recently released a report, titled “Optimization of Denitrifying Bioreactor Performance with Agricultural Residue-Based Filter Media.” The report describes a study conducted by the USDA-Agricultural Research Service (USDA-ARS), which investigated the performance of agriculturally derived residue materials in denitrifying bioreactors. The study demonstrated that agricultural residue-based materials (e.g. stover, straw, cobs) used as filter media in place of wood chips can improve the performance and decrease the size of bioreactors, which potentially lowers their cost.

The Experiment

Researchers designed and constructed a system to pump water through eighteen PVC column bioreactors, filled with various agriculturally derived media. The system, situated in a temperature-controlled chamber, received chemicals added to water filtered by reverse osmosis to reflect the chemistry of agricultural drainage water in Minnesota. The researchers then developed a method to fill and mix chemicals in two water-holding tanks in the temperature-controlled chamber before transferring the water to a single, larger inlet tank.

Utilization of these agricultural residue-based materials showed a potential benefit to Minnesota’s economic and environmental development. Given the greater nitrate-N removal rates of agricultural residues, there may be opportunities to reduce the size of the bioreactor unit, or to increase nitrate-N removal effectiveness within a given bioreactor footprint. Also, the proximity of agricultural residues to an edge-of-field bioreactor is a significant incentive to design a way to use them successfully.

The results informed two additional research efforts to increase the rate of nitrate N removal in Minnesota tile drainage water. An additional column experiment, funded by the Minnesota Department of Agriculture, was also conducted by a Master of Science (M.S.) student at the University of Minnesota using three treatments that included corn cobs and three that used wood chips. In order to enhance the rate of removal of nitrate-N from tile drainage water in a field setting in southwestern Minnesota, the study further combined the findings from this additional column experiment with those of the present experiment. Thus, the impact of the relatively modest project that is the subject of this report continues well beyond the project’s scope.

The Future

While not ready for wide-scale adoption, the research is promising. The work demonstrated that at least in the short term, the hydraulic conductivities of corn cobs and corn stover is near that of wood chips, warranting further study over a longer service life. The nitrate-N removal performance of all three agricultural residues was superior to that of wood chips at two temperatures spanning the expected range of ground temperatures in Minnesota. A logical next phase of the project would be to select the most promising material and build a pilot scale bioreactor at a field location.

OCTOBER

8th-12th

FIRST-EVER

Food Ag Ideas Week

Coming up this month is the first-ever Food Ag Ideas Week, an event devoted to bringing together thought leaders from across the food and agriculture industries to lead discussions on topics ranging from sustainable agriculture to food innovation and tech. To learn more about this exciting event, AURI sat down with the week's primary planner, Lauren Pradhan, Director of Grow North MN.

What is FAI Week?

Food, Ag, Ideas Week is October 8th-12th in Minneapolis/St. Paul and is 5 days of individually ticketed events and experiences designed to showcase and drive connectivity to Minnesota's growing food and agriculture entrepreneur and innovation community. It spotlights some of the incredible leaders and innovators across sustainable agriculture, food innovation and tech, and food and society.

How did the idea for it come about?

Leading Grow North, I have the privilege of meeting leaders across the sector - entrepreneurs, civic leaders, non-profit, for profit, corporate. I would hear a desire to get different communities together, to be louder about what is happening here, and to create more opportunities to network collectively in our ecosystem. So we saw an opportunity to build something for those already in the ecosystem to 'crash' together and create authentic connections as well as be an invitation to those that are not involved but want to be.

What is the goal or mission of FAI week?

The goal is to increase exposure and connectivity to our ecosystem so that we increase engagement and investment in our community which will hopefully lead to the acceleration of business growth. This community has so much potential since we have such a legacy and world of expertise in food and agriculture, and now is the time to maximize it.

Is it considered a single event or a week's worth of events?

FAI Week is a series of individually ticketed events and experiences. We have over 20+ events to choose from and people can build their own schedules to make it work for them. From benchmarking across the country, we knew that conferences and events like this can be very expensive with travel and ticket prices and that creates a barrier for a lot of people. So we wanted to challenge the model and make each event have its own ticket and through the incredible support of our partners, we have been able to make the price point very accessible. We also offer free scholarship tickets for non-profits, just starting out entrepreneurs and students.

Can you tell us about some of the expected highlights for the week?

We have an amazing line up of events including a free opening keynote with Jeff Harmening, CEO and Chairman of the Board of General Mills with Kerri Miller of MPR News, diverse panels on everything from The Continued Rise of Small Food Brands, Plant Proteins, Ag Innovation and Craft Beer, Reimagining School Nutrition to a Farmtech Innovation experience with Land O' Lakes. We are also thrilled to partner with AURI as they launch their Nexus of Food and Health Forum on Thursday as well as collaborating on a panel on Hemp, MN and Creating a New Industry.

Who benefits from attending FAI week events?

This is an opportunity for individuals and leaders who are in the food, agriculture, beverage sector as well as those who are interested to come together. We have already seen people register from many of the large corporates in town, investors from across the country, entrepreneurs of all sizes, students and more. We have designed all of our events for networking, so participants will get to not only meet each other but the panelists.

To learn more about FAI week, view an agenda of the week's events or obtain tickets, visit foodagideas.com



“The goal is to increase exposure and connectivity to our ecosystem so that we increase engagement and investment in our community.”

Lauren Pradhan, Director of Grow North MN.



FROM FARM

BY DAN LEMKE

Each weekday, hundreds of thousands of Minnesota kids walk, pedal, ride or drive to nearby schools in search of education. To power higher learning, schools across the state provide an estimated 975,000 lunches each day and an additional 550,000 breakfasts.

Despite strict meal planning requirements and often tight budgets, there is growing interest across Minnesota to incorporate more locally produced foods into school menus. Numerous Minnesota school districts have established farm to school connections that bring local foods into the lunchroom, providing nutritious food and exposing children to agriculture.

“Most students don’t know where their food comes from and the foods they’re eating at home are ever more processed,” says Jean Ronnei, school nutrition expert. “Farm to school programs expose students to unprocessed or minimally processed foods.”

Ronnei is former chief operating officer and director of nutrition services for St. Paul Public Schools. She also served as School Nutrition Association national president. Ronnei worked with AURI on several projects to learn more about the opportunity school lunch programs offer to Minnesota businesses and to help those companies navigate the complex pathway from farm to school.

Broadening Interest

Interest in locally sourced food goes beyond fresh produce and now includes minimally processed, value-added food products. Gaining access to the school food market provides an opportunity for some Minnesota food entrepreneurs while strengthening the connection between farming and the food kids eat.

“Farm to school programs offer an opportunity to establish a pipeline for getting local farm produce into schools, but there’s also interest in getting more finished products into schools,” says Jennifer Wagner-Lahr, AURI senior director of innovation and commercialization.

Ronnei says many school districts are facing increasing pressure from their communities to offer healthier food, which includes focusing on clean labels—products with fewer ingredients of concern—for the items they’re serving. Ronnei and Catherine Stine, The Stine Group engaged with school districts across Minnesota to gauge the importance of food with clean labels. Ronnei then worked with The Good Acre to conduct webinars with food entrepreneurs to help them understand more about the opportunities and requirements for getting their products onto school menus.

“School food programs are very complicated,” Ronnei says. “Nutrition directors face complex regulations and nutrition requirements, and it can be challenging for them to make their budgets work.”

Businesses hoping to enter the school food market face a daunting task to convince school nutrition directors that their products can work into nutrition plans, but it is happening.

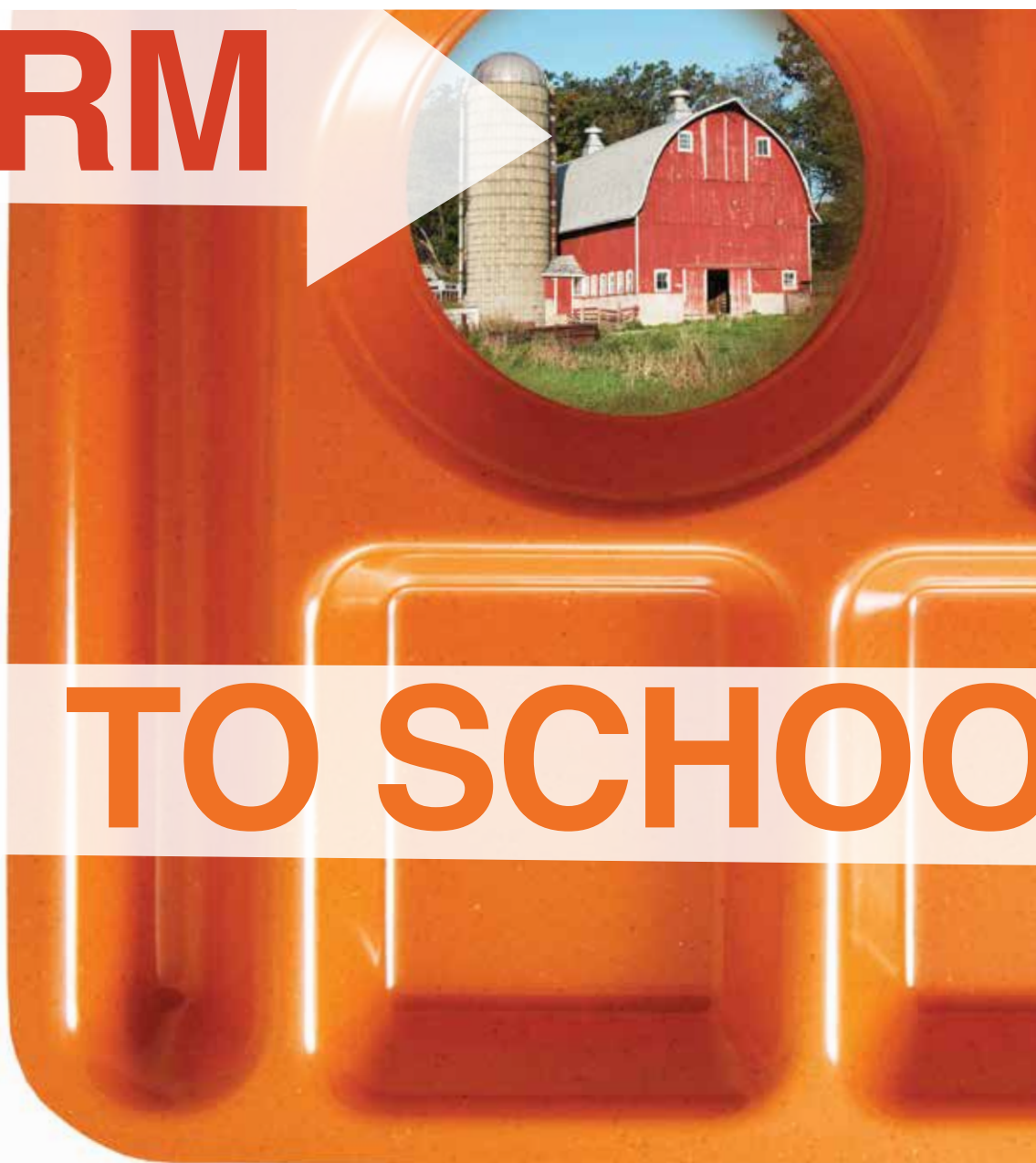
A Decade of Development

Ferndale Market, a family-owned turkey farm and retail market in Cannon Falls, is one of many Minnesota business that is making farm to school work. Owner John Peterson says his turkey products first got in the school lunch door nearly 10 years ago. He then connected with several schools through a series of farmer-buyer events.

“It was a real education for me,” Peterson says. “I learned how few schools could prepare raw protein. I came to the realization that if we’re going to do meaningful work with schools, we had to match their needs.”

As a result, Peterson and Ferndale Market worked to develop heat and serve turkey products that perform well in schools. Today, Peterson says Ferndale Market has products including turkey brats and burgers in 12 to 15 school districts ranging from the local Cannon Falls schools to larger districts, including Minneapolis and St. Paul.

Peterson says that even though it seems logical to pair locally grown food with local schools, the process isn’t that simple. He says school nutrition directors must balance cost and nutrition guidelines while providing students with healthy food items they’ll actually eat.



TO SCHOOL

“It takes a lot of creativity on their (nutrition directors) part to make it work. They really have a puzzle to put together,” Peterson says. “I stand in awe of how they do it.”

Peterson says in his experience, districts either completely shy away from incorporating local foods or they are trying to incorporate locally-sourced ingredients, even if its once a year. October is national Farm to School month, with many districts sourcing ingredients for at least one meal from local farms.

“That creates an opportunity for farmers who want to dip their toe into the school market,” Peterson contends. “We’re most appreciative of districts that have woven local foods into their meal planning.”

AURI Support

Because the path from farm to school lunches can be complex, AURI is ramping up its expertise to help food companies and entrepreneurs be better equipped to enter that market. AURI food scientist Lolly Occhino is learning more about the criteria school nutrition directors use when considering adding food products to their menus. That knowledge should better prepare AURI clients who may be a fit for school lunches.

“We are still at the earlier stages, but we can work with food entrepreneurs on their product formulation sheets, which help food service managers understand how that product may fit into their menu,” Occhino says.

Because the farm to school market opportunity is relatively new, there is a lot to learn about the challenges.

“There is definitely an opportunity, but there are a lot of barriers to entry, including pricing, technical needs and determining where the product fits in,” Occhino adds. “School food is an untapped market that a lot of businesses haven’t yet taken advantage.”

Ronnei says schools also are trying to improve the perception of school lunches by offering new food items that students like, which presents another opportunity for food entrepreneurs.

“It’s extremely valuable if you can get all those factors in line,” Ronnei says.

“Farm to school programs expose students to unprocessed or minimally processed foods.”



Checking All the Boxes

Ronnei says school lunch directors not only evaluate nutrition and price, they must consider whether a food product has the proper distribution channel established. St. Paul schools, for example, serve about 30,000 lunches and 20,000 breakfasts per day. The meals are prepared at a central kitchen and distributed throughout the district.

The Good Acre is a nonprofit food hub located in Falcon Heights that works to connect and strengthen farmers, food makers, and communities through food. One of the organization's fastest growing areas of work is its Culinary Training program, which helps schools successfully include more local produce on their lunch lines.

“This presents a huge opportunity as a lot of schools are featuring local produce because it's what parents want,” says Nikki Warner, The Good Acre marketing manager. “If we can help farmers grow for bigger wholesale accounts and get kids to eat more fresh produce, that's a win.”

In 2017, The Good Acre sold 90,000 pounds of produce to 14 school districts, providing 576,000 vegetable servings to students. Making local food more accessible is one benefit of the organization's wholesale program, but its primary goal is to support local farmers.

“While each case order may seem inconsequential to overall food system change, the impact to the local economy and individual family farms is significant. Our wholesale program returns 80 to 90 percent of each dollar in sales right back to the farmers we work with,” says Nick Mabe, Sales and Logistics Director at The Good Acre.

Getting into school nutrition programs may not be for everyone, but for some businesses, it may be the market boost they need.

“It is a way to scale up business,” Wagner-Lahr says. “It's not likely to be a massive money-maker, but if you can put products onto a school menu even once a month, you are creating new consumers. It's a great way to market products and get healthy items into schools.”



October is National Farm to School Month,

a time to celebrate connections between schools and local food. While many school districts host their own activities, there are two major statewide activities to celebrate.

Thursday, October 4, participating schools throughout Minnesota will celebrate Minnesota Thursday. All menu items will be sourced from Minnesota producers. This year's menu includes turkey chili, roasted potato wedges, cornbread, coleslaw, apple crisp, and milk.

Thursday, October 11, schools, early care organizations, and others are participating in the Great Lakes Great Apple Crunch. At noon (or during a regularly scheduled lunch period), students will bite down on an apple and create a giant “Crunch!” Schools all over the Great Lakes region will be participating. Some schools will even invite a local apple farmer to join them. Schools in Minnesota that register ahead of time will be sent stickers for all participating students.

The Minnesota Department of Agriculture (MDA) also celebrates Farm to School Month by visiting a few select schools each year that have received AGRI Farm to School Grants.

“Our first coordinated statewide Farm to School Month celebration in Minnesota was in 2012,” says Ashley Bress, MDA marketing and development. “Our goal is always to strengthen the connections between local producers and local schools, and this is a great opportunity to raise awareness of the opportunity for schools to purchase locally.”

Bress says in 2017, over 1.5 million people across the Great Lakes region joined in the celebration with 244,002 apple crunchers in Minnesota from 619 schools and organizations. In 2018, MDA has set a goal of having 260,000 apple crunchers at 260 sites statewide and having 25 school districts participate in Minnesota Thursdays.

Farm to School Month celebrates the connection communities have with fresh, healthy food and local food producers by changing food purchasing and education practices at schools and preschools. Bress says when schools buy local, they create new markets for local and regional farmers and contribute to vibrant communities.

“At the MDA, we see Farm to School as one tool that producers can use to diversify their revenue streams,” Bress says. “Very few farmers are going to be able to subsist on just Farm to School, but it's another tool that they can add to their business.”

Bress says kids are excited about Farm to School and they're often willing to try different fruits and vegetables when they've had an opportunity to grow the item in a school garden or to meet the farmer who produced it. They'll then go home and ask their parents or caregivers to purchase the item at the grocery store or at the farmers' market.

“If we can get kids excited about fruits and vegetables and other local offerings, they're going to be able to influence their families and are more apt to become lifelong consumers of local food,” Bress says.

Q & A

An in-depth interview with

TERA JOHNSON

This edition of Ag Innovation News brings you an interview with Tera Johnson, a serial entrepreneur whose mission is to create the next generation of regenerative food and farming businesses. The founder of Tera's Whey, Tera participated in the full arc of creating and selling a successful investor-financed food company. Now the founder of the Food Finance Institute (FFI) at the University of Wisconsin-Extension, Tera is a frequent speaker, teacher and consultant to sustainable food and farming businesses, social venture funds and investors.

Can you begin by talking about why target marketing is so important in the food industry?

▲ Target marketing is a huge piece of the consumer packaged goods (CPG) process that can be particularly difficult for those in the value-added food industry. Historically in farming, people grow what they like to grow, is convenient to grow or works in their climate. In the commodity world people don't need to care about who the consumers are. In the CPG world its important to care about who they are and what they are looking for.

How does a food entrepreneur start this process of gathering information on the consumer?

▲ People who are starting out actually have a wonderful opportunity to learn about their consumers. Every single interaction with a consumer is a market research opportunity. When a food entrepreneur is selling their product at a farmer's market or selling from a food truck, one of the best things they can do is observe who their customers are. That's free information and it comes from people who have already self-selected to be a customer. Learning about the customer helps



Entrepreneurship in the Consumer Packaged Goods Industry



companies decide what else they can do to grow their business. There are also some free online sources of information. One of my favorite free online tools is PRIZM. It's an incredible tool because it allows you to research the consumers by zip code. Type in a zip code and the system will show you the top five customer profiles for people who live in that area.

The reason this is powerful for food is that people don't tend to travel a long way to go grocery shopping. People shop where they live. I'll give you a situation where this would be a very helpful tool to use. In this example, the company has a cheese product. The company has their product in about 20 grocery stores. They look at their customer list and realize that there is one particular store that sells their product more than any other does. The company needs to find out more about the consumers in that zip code. This is where PRIZM comes in handy. They can find out who their customers are, what they like, and find more of them in other areas. This process will help entrepreneurs avoid wasting a bunch of time selling their product to a demographic that will not be receptive.

Is this tool solely for food entrepreneurs?

▲ This tool wouldn't work as well for other CPG categories because people are more likely to travel further for other products. Our behavior around food says we don't get in a car and drive all the way across town to go grocery shopping.

Let me give you an example. I worked with a client who sold head cheese. The client's mother started her business in the 1950s in inner city Milwaukee. The client was interested in growing her business so she went to a consultant for help. The consultant told her that her customers were getting old and she needed to focus on a demographic that could spend more money. They told her she should start making pâté and sell it at Whole Foods. The problem is, the business owner didn't know anything about that market.



As it turns out, my client made head cheese *and* she distributed it. I looked at her customer list and found that her best customers were in neighborhoods where a distributor wouldn't drive a truck because it was too dangerous. We used this PRIZM tool to figure out the profile of the people in those neighborhoods. Then, we identified all kinds of target markets for growing her existing business. This tool helped her get a game plan together about where to take her business in the future. That's an example of why data is so powerful.

How should a business think differently about transforming an agricultural crop viewed as a commodity into a value-added food product?

▲ Businesses need to think about the consumers first. They also need to consider scale. If they grow 4,000 acres of corn they won't be selling to individual consumers. It's too much corn. The scale of what's produced is relevant to the conversation. The people who are most likely to have an opportunity to do something direct to consumer, are going to be the smaller farms. I'll give you an example of someone I worked with who grew hops on his farm. Initially, he wanted to grow hops so he helped start a cooperative of hops growers in Wisconsin. He still does that, but he realized it wasn't enough, so he started making beer. He ended up opening a taproom in a lovely little artsy town that happened to be a bicycle destination for people coming out of Madison, Wisconsin. The business just took off because he knew how to market. He started selling light beer because the people drinking it were coming in on bikes and he knew they wanted a light refreshing beer, not a heavy dark beer. He made the transition to the beer that his target market wanted to drink.

As one of these small businesses, how do you go about defining an unmet consumer need?

▲ For rural food entrepreneurs that want to get to scale, they have to sell their product to people who don't live where they do. This can be very difficult for these rural entrepreneurs to do. For example, with Tera's Whey I learned that almost 40 percent of whey protein consumed in the United States is in California. When I was doing my branding, I used an agency from California

to design the packaging. I also knew that protein was popular in the body building community. I went to a competition where I walked around and asked body builders if they would be interested in organic whey with no additives. I literally had someone look at me and ask me why they should care about the ingredients in their whey protein. I didn't leave there thinking I was a failure. I left there knowing that was not my target market.

Let me take a little bit of a right turn. Can you highlight some of the most relevant pain points entrepreneurs may encounter when building a food business?

▲ A big pain point for entrepreneurs can be growth and changing business models as they grow. Let me explain what this looks like. As a business gains success it has to grow in order to continue to be successful. Some business owners will say they don't want to go down that path because, they want to remain a local business. I worked with a client from Madison that made toffee. She was up to about \$40,000 in sales and still working at her day job. Then, her toffee was included in the Emmy swag bags. She assumed this meant she was a national brand. Unfortunately, she wasn't a national brand yet. She was going to need to raise millions of dollars if she wanted to go national. My client decided that going national wasn't what she wanted. She switched gears and opened a café in Madison. It turned out that nobody gets up at six in the morning in Madison. What the consumer wanted was a place they could go after dinner to eat desert, drink red wine and listen to music. She still has her toffee brand but this expansion allowed her to stay a local business and grow at the same time.

Do you have an example of alternate, non-traditional business models that you might be able to share?

▲ My client with the toffee had a vertical business model. Selling to the consumer is what makes it vertical. There are also companies in the food space that have grown horizontally. A famous example is Zingerman's Delicatessen in Ann Arbor, Michigan. They're up to 20 different Zingerman's businesses now. They have this whole portfolio of companies and they're horizontal because they all feed each other. They were really the first food

company that took that approach or that business model of growing horizontally. Businesses in smaller communities, and realistically a lot of food entrepreneurs that we work with, aren't going to be national brands. That's where these vertical and horizontal business models come in. It's a way to gain in scale but stay local at the same time.

As a support organization what would you tell the next client who wants to launch a food product in a crowded, highly competitive food category, like barbecue sauce or granola?

▲ When I work with a client we conduct a product matrix. It compares the client's product to the competition. Then I spend a ton of time talking about defensible uniqueness. Clients have to identify what makes their product different from their competitors. If you don't have something that makes you defensibly unique in the food world now, you're dead. The other thing we see a lot of right now in the local food movement is a mission to change the world. You see brands donating a portion of their sales to certain causes. My comment about this is that its not a differentiation anymore. It's almost a requirement to get into the community co-op. I'm not saying business shouldn't do it, but it's not enough anymore by itself.

How do you communicate to clients or give them this sense of what they're getting themselves into?

▲ I have the distinct advantage of credibility with this because of Tera's Whey. I educate through examples, so I do a lot of storytelling. At heart, I'm a food entrepreneur and I love helping business succeed.

What are FODMAPs and why are they important?

BY AURI

This edition of Seeing Around Corners addresses an issue of increasing discussion with regard to digestibility of foods: Fermentable Oligo-, Di-, Monosaccharides and Polyols, or FODMAPs for short. FODMAPs are defined as a collection of short-chain carbohydrates (sugars) found naturally in many foods and food additives, which the gut doesn't properly absorb. Instead, they reach the far end of the intestine where the gut bacteria use these carbohydrates for fuel, producing gas and causing all sorts of digestive issues. Often, this triggers symptoms in people with Irritable Bowel Syndrome (IBS) and may potentially be a factor in misdiagnosing gluten sensitivity.

With growing numbers of people dealing with IBS, food producers will need to be increasingly more aware of this issue and how to address it. Because of this, AURI has partnered with the Minnesota Wheat Research and Promotion

Council to conduct work with experts at the University of Alberta (UofA). The project goal is to better understand FODMAP levels through different processing techniques with their applicability to the digestibility issues facing the wheat and bread industry sectors.

Research previously conducted at UofA indicated applying specific FODMAP-targeting metabolic properties to wholegrain-bread-making potentially reduces their content in bread without affecting the levels of the slowly fermented and well-tolerated dietary fiber.

Another recent study outlined a number of concepts relating to fructan (one of the five most common FODMAPs along with fructose, lactose galactans and polyols), which allows for the development of low FODMAP sourdough bread. This process innovation offers a means for developing natural and fiber-rich low bakery products for people with digestive issues.

F ermentable
O ligosaccharides
D isaccharides
M onosaccharides
A nd
P olyols

Thanks to these research projects, and others like them, Minnesota entrepreneurs and food producers are learning more and more about how their ingredients affect people, and just as importantly they are learning how to adjust their formulations and processes to reduce FODMAPs in their products.

AURI is learning a lot, too, which is why it will continue to work with its partners to further research in this area as well as help advance wheat based products that lower these irritants to potentially increase new market opportunities for consumers that currently suffer from IBS.

If you'd like to read more about the current and past research, please check out these resources:

<https://www.monash.edu/medicine/ccs/gastroenterology/fodmap>

<http://www.cfp.ca/content/cfp/61/8/691.full.pdf>

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.



New Shoe Made From Cotton and Corn

A shoe is no longer just a shoe, it's a value-added agricultural product. Reebok launched their first plant based athletic shoe, the "NPC U.K. Cotton + Corn". The shoe has a sole made from a corn-based rubber substitute, a top made from 100 percent organic cotton, and an insole made from castor bean oil. No dyes were used, and the packaging is 100 percent recyclable. Most shoes sit in landfills for hundred of years, but these shoes are made from materials that can be replenished. Generally, the footwear industry creates almost every shoe using petroleum oil to make synthetic rubber. Petroleum can be harmful to the environment and is not sustainable. This shoe is 75 percent USDA certified bio-based content. In the future, Reebok hopes to go even further and create a shoe that is biodegradable and would decompose within 6 months.

August 16, 2018 EcoWatch



Super slippery packaging aims to cut down on food waste

Virginia Tech researchers are finding new ways to cut down on food waste and consumer frustration. Consumers understand the frustration of trying to squeeze out every drop of ketchup from those small plastic packets. Food left behind in plastic packaging contributes to a huge amount of food waste. Researchers found that they could reduce food waste by using super slippery industrial packaging. The study establishes a method for wicking chemically compatible vegetable oils into the surfaces of common extruded plastics. Researchers used natural oils like cottonseed oil on the plastic surfaces. This technique allows sticky foods to release from their packaging. This process can be used on plastics like polyethylene and polypropylene. Potential applications go way beyond ketchup packets and could include other condiments, dairy products, beverages, and some meat products trapped in their packaging.

August 3, 2018 Science Daily

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

Cheese made on a farm from the milk of animals that live at the farm is known as what?

- a. Artisanal
- b. Farmstead
- c. Organic
- d. Homemade

Answer: b

Renewable Energy

The U.S. Environmental Protection Agency (EPA) has approved what crop as an eligible feedstock under the Renewable Fuel Standard?

- a. Sorghum
- b. Pennycress
- c. Palm oil
- d. Cassava

Answer: a

Coproducts

Biomass fuels provided what percent of the energy used in the U.S. in 2017?

- a. 2
- b. 6
- c. 14
- d. None of the above

Answer: a

Biobased Products

Which of the following is an example of how one can use corn stover?

- a. Capturing and cleaning up spills
- b. Ethanol production
- c. Feed
- d. All of the above

Answer: d

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 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 [@AURIconm](https://twitter.com/AURIconm)

Contact Us

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

ABOUT AG INNOVATION NEWS

Erik Evans, managing editor
Rolf Hagberg, photography
Design by,



Electronic pdf copies of current and previous *Ag Innovation News* issues are available on the website: auri.org.

Address correspondence or subscription requests to:

Ag Innovation News
PO Box 251
Waseca MN 56093
507.835.8990
news@auri.org



BOARD OF DIRECTORS

Ron Obermoller, Chair

Minnesota Soybean Research & Promotion Council

Jerry Hasnedl, Vice Chair

Minnesota Farmers Union

Larry Johnson, Secretary/Treasurer

Agribusiness

Sen. Rich Draheim

Minnesota Senate

Rep. Deb Kiel

Minnesota House of Representatives

John Schafer

Minnesota Beef Council

Jill Zullo, Ph.D.

Agribusiness

Carolyn Olson

Minnesota Farm Bureau

Ken Asp

Minnesota Wheat Research & Promotion Council

Tariffs Provide Unique Window of Opportunity for Innovation

BY RON OBERMOLLER, AURI CHAIR

In recent weeks and months, much has been written about the tariffs imposed on U.S. agricultural exports, and arguments have been made on both sides of the trade proceedings. Regardless of the side on which you fall, one truth cannot be argued, it has contributed to lower farm gate prices. This, in turn, makes it harder for families to continue the proud Minnesota tradition of farming. This will inevitably lead to fewer farms and, due to the flight of rural youth to metropolitan areas in search of a brighter future, fewer farmers. These facts make the present a critical juncture in the future of American agriculture. The actions we take now will have a long-term impact for future generations across the country, in both rural and urban communities.

This is why I think it's important to point out the current situation has created a unique window of opportunity for Minnesota. You see, in times like this innovation is more important than ever. Be it finding innovative new ways to use Minnesota-grown commodities or developing ways to introduce new markets or revenue streams into existing agricultural operations.

As I write this, there is an organization in this state, which you should be aware of, who is doing exactly that. The Agricultural Utilization Research Institute (AURI) investigates new ways to use commodities, create new revenue streams for Minnesota farmers and supports the innovations of producers, entrepreneurs and agribusinesses. It helps develop new uses for agricultural products through science and technology, while partnering with businesses to commercialize them.

AURI works in partnership with research and promotion councils, agribusinesses, academia, government and many other partners to advance innovative ideas that have commercial application. As a result, AURI has helped countless producers, businesses and organizations advance ideas to the marketplace, and thus created economic opportunities across the state, through new sales utilizing the state's commodities as well as through increased capital investment and job creation.

The state created AURI nearly 30 years ago to advance opportunities for agricultural producers and today AURI continues to stand ready to serve producers and businesses that want to explore new possibilities for their lower priced crops and livestock through value-added endeavors. Whether you believe the current trade approach is a good thing for our country, or a detriment, it is the current reality. As a result, now may be an opportune time to explore those often-considered value-added ideas for your crops through the efforts of organizations like AURI.



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