



Ag Innovation News

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AURI

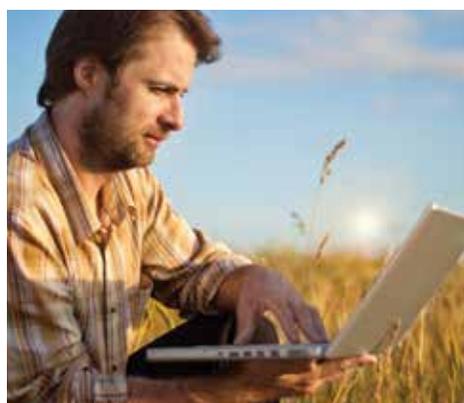
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Building Mutually Beneficial Partnerships for a Bright Future

BY SHANNON SCHLECHT
AURI EXECUTIVE DIRECTOR

“ I firmly believe that partnerships like this are critical to the future of our respective industries, and, more importantly, to the future of rural communities throughout this great nation. ”

I am pleased to announce Compeer Financial Services support of AURI to meet a shared goal of fostering Minnesota agriculture and the value-added sector.

Compeer's support funds will help AURI advance rural projects and its focus on creating business opportunities in rural communities, which help further AURI's overall mission. In return, AURI helps advance investable ideas to further grow rural food and agricultural opportunities, which align with Compeer's mission.

The idea for this collaboration came about during conversations within AURI's convening of financial investors and the potential synergies around opportunities in rural Minnesota we could further through greater collaboration. It made a lot of sense then, as it does now, because the collaboration aligns with AURI's long-term goal of furthering commodity utilization and economic investment.

In past years, AURI received donations from companies and individuals to further its mission when there was alignment. I firmly believe that partnerships like this are critical to the future of our respective industries, and, more importantly, to the future of rural communities throughout the country. This is an excellent starting point for enhancing the collaboration and I can't wait to see where it goes.

I appreciate the support of each and every organization AURI partners with to advance agricultural opportunities and I'd enjoy hearing from other organizations who feel their mission aligns with AURI's objectives to discover if there are additional opportunities to collaborate. Let's talk and see if we can strengthen Minnesota's rural communities, economy and ultimately foster innovative agricultural ideas to create commercial outcomes to benefit the state's agricultural industry and its producers.



About: Compeer Financial

Compeer Financial provides loans, leases, risk management and other financial services throughout 144 counties in Illinois, Minnesota and Wisconsin. Compeer has 1,200 dedicated team members serving more than 43,000 clients.

Mission: Enriching agriculture and rural America.

Vision: Trusted financial services partner advancing agriculture and rural America



BY AURI

This quarter the Ag Innovation News brings you an interview with AURI board member, John Schafer. John comes from a multi-generational farming family who recently celebrated their centennial in the Hereford cattle business. Therefore, it should come as no surprise he brings a wealth of beef and traditional protein expertise to the board.

AIN Which agricultural group do you represent?

I represent the Minnesota Beef Council on AURI's Board of Directors.

JS

AIN Please give us some highlights around your agriculture background.

I'm the fourth generation on a farm near Buffalo Lake, MN, where we raise corn, soybeans, alfalfa, grass and registered Hereford cattle. Last year we celebrated 100 years in the Hereford business and my father was inducted into the American Hereford Association's Hall of Fame.

JS

I have a B.S. from the University of Minnesota in Animal Science. I've served as a leader of several organizations including six years representing Minnesota on the Cattlemen's Beef Board. I represented that entity on the Beef Promotion Operating Committee for five years and on the beef industry's Product Enhancement Committee for six years, including two years as Vice-Chairman. I am currently chairman of the Research Committee for the Minnesota Beef Council.

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

I predict there will be more specialty crops and livestock grown under contract for a specific market. I also think there will be greater effort to extract more value from co-products. Sustainability/efficiency will be emphasized. This will take many forms including efficient use of labor and equipment, streamlined processing, packaging, and distribution, and recycling of waste streams to name a few. Efficient use and recycling of water will get lots of attention. Foods will see a continued trend toward more source and process verification and the trend towards more diversified foods will accelerate. Marketing and distribution of foods is going to change dramatically with profound and probably unpredictable effects on agriculture. Renewable bio-based chemicals will find more niches. The energy market has changed a great deal in recent years. I anticipate that the focus for carbon based renewable energy will shift to specific niche markets.

JS

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

That's a tough question to answer. The nature of innovation can be fickle—seemingly small successes can become blockbusters over time, while research results can take many years to pay dividends. What that means is that it's difficult to evaluate our success in the short term. I will say though, that we have assembled an organization of talented individuals that have been integrated into a cohesive team with tremendous potential. We've had many successes in the past and I believe we are poised to achieve much more.

JS

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

I think there are significant opportunities for more collaboration with like-minded entities, public and private, in neighboring states. I know we have developed resources that many of our neighbors lack and they probably have some expertise in certain fields that we can utilize. I would also like to see stronger ties between AURI and academic institutions in Minnesota and neighboring states. We already work with a number of other non-profit organizations to support the needs of our clients but we can do more. There are lots of different entities involved in the production, processing, and marketing of Minnesota's plethora of agricultural products and each one is an opportunity for more collaboration.

AIN

JS

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

I want to help AURI fulfill its mission. Hopefully by the time I retire from the board, revenues will have increased and will be from more diverse sources; AURI and its resources will be more widely used and respected; and Minnesota will be universally recognized as the leader in Ag innovation.

AIN

JS

AIN What are your goals for the AURI Board of Directors?

I want us to provide strategic oversight. We shouldn't micro-manage but we should have constructive dialogue about priorities and should ask lots of questions about how and why we do things. We need to be sure though that our staff understands we are doing this to strengthen the organization rather than to second guess their actions. It is our responsibility to see that we have a top-notch staff and that the staff has the resources to achieve our goals but we must not become an obstacle to their success. Board members should also play a role in making AURI more widely known to the public.

AIN

JS

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

It's our responsibility to provide a strategic vision, assemble a roster of capable employees, encourage a culture of accomplishment, and expect greatness. A few specific things we can do are to increase revenue, especially from new sources, help raise the public profile of AURI, and provide sufficient oversight to inspire confidence that AURI's resources are properly utilized.

AIN

JS

GATHERING ALL THE *iNgrEDienTs*



PHOTOS BY ROLF HAGBERG

NE Food District creators, Chad Gillard and Zoie Glass founded Midwest Pantry in 2010

There are still opportunities in the NE Food District! To learn more, email zoie@midwestpantry.com or chad@midwestpantry.com

BY AURI

Midwest Pantry's Zoie Glass is an avid ice fisher. She finds it relaxing, but one also could reasonably conclude her on a frozen lake dreaming up yet another service – such as supplying raw materials to any of the six tenant partners at the Northeast Food District in Minneapolis. The thought's not too far-fetched: Contained on NE Food District's eight-acre campus is what's largely a turnkey operation for any entrepreneur who has a food idea and wants to bring it to market.

Glass and her partner, Chad Gillard, started Midwest Pantry in 2010. They'd met three years earlier while selling products at local farmers' markets – she jam; he aebelskivers, a Danish cousin of the pancake. Soon they started sharing ideas, cross-promoting and generally planting the seed that would sprout the idea for a collaborative shared space where food entrepreneurs of all stripes could go to affordably access knowledge, expertise, and the facilities required to develop and market a food product.

"We realized there's a lot that has to happen between simply having a product and selling it successfully," Glass says. "We'd discovered the benefits of leveraging the expertise of others and saw value in common, shared spaces entrepreneurs could access on a much more reasonable budget. The whole idea made sense to us."

Phase Two includes offices, co-worker space, meeting rooms and an event center, all exclusively for food enterprises, paid for based on frequency of use.

A third phase will add additional kitchens and seek to better accommodate specific companies that are further along in the product development process and need customized facilities.

But, as Glass was quick to mention, developing a product with potential is only the beginning of the journey. At some point, fledgling food entrepreneurs need to take off the apron and pick up a briefcase. Helping them navigate the many facets of getting their product to the store – and off the shelves is a key component in Midwest Pantry/NE Food District's raison d'être.

For example, Midwest Pantry collaborates with the Carlson School of Business at the University of Minnesota to offer courses on raising capital, understanding wholesale pricing as well as instruction on trade show booth design and merchandising.

Glass also works to lower other, often prohibitively high, start-up costs. For one, to get noticed and in front of buyers generally requires getting on the trade show circuit.

MIDWEST PANTRY AND ITS NE FOOD DISTRICT LOWER HURDLES THAT ENCUMBER FOOD ENTREPRENEURS

Not small thinkers and blessed with innate savvy, Glass and Gillard embarked on a journey to realize their vision. Enter Minneapolis real estate developers Ellis Properties. With the added activity and traffic that came with the completion of the renovation of a nearby bridge, along with the gentrification of Northeast Minneapolis, Ellis thought it prudent to upgrade a 10,000 square-foot property it owns in the area. Ellis liked Midwest Pantry's concept for a collaborative food innovation district. A partnership – and the NE Food District – were born.

Work on Phase One began in 2017. The space features six production kitchens, a walk-in cooler, a loading dock and staff to oversee everything. NE Food District's tenant partners sign a three-year lease for a set rate and can access the space 24/7/365. To be selected to participate, candidates must have a good foothold in wholesale operations and possess a measure of business acumen – especially an understanding of the costs they'll encounter to do business as a food entrepreneur.

"Trade shows generally take place on either coast, and fees to participate can exceed \$10,000," she says. "Then add the cost of getting yourself and your booth there and back. We needed to move the action closer to home, so we sponsor semi-annual trade shows – for which booth space rents in the \$400 range – and a retail holiday market to give our local producers a shorter, more direct path to retail distribution.

Glass knew from experience that packaging isn't cheap, typically because of very high minimum orders: The alternative is smaller orders where shipping can drive the cost per piece into the stratosphere. So she and Gillard partnered with Minneapolis-based Gamer Packaging. They established an on-site packaging warehouse that eliminates shipping costs and works with a tenant partner to find economical packaging options that effectively present the brand without breaking the bank.

“I’VE LOOKED, AND NOWHERE IN THE NATION HAVE I FOUND THE TYPE AND LEVEL OF TECHNICAL SUPPORT FOOD ENTREPRENEURS CAN GET FROM AURI.”

Kitchen equipment’s not cheap, either. So, rather than each tenant partner individually ordering what they needed, Glass assembled a product list that included everyone’s requirements, bid the entire package and offered everyone better pricing.

And then there’s marketing. Glass is always promoting her tenant partners’ products, in fact, she placed tenant Twisted Shrub’s mixers in the media Green Room at Super Bowl LII. She believes the opportunity to represent all of her clients together creates a synergy that narrows disadvantage small entrepreneurs encounter.

To hear Glass tell it, AURI’s involvement provides a resource essential to the NE Food District mix. For example, Scott Dillon started Twisted Shrub to develop and sell his interpretation of the vinegar-based mixer that’s generally combined with fruit to create a refreshing addition to alcoholic or non-alcoholic beverages. When he bumped up against the need for a nutrition facts label, he called AURI for help.

“AURI had the people on staff with the expertise to get me past the ‘scientific’ requirements of bringing my shrubs to market,” he says. “When I modified a flavor, it required a new nutritional analysis that in turn required a new nutrition facts label. Thanks to AURI, that process moved quickly, capably and cost-effectively.”

AURI works in other ways, too. Take Jeff Casper. He’s a food scientist whose 18 years of industry experience includes product development and management roles at Pillsbury, General Mills, and Cargill as well as R&D roles at Horizon Milling and back at Cargill. In 2015, he left the science of large-scale food creation and turned his curiosity towards building something local: a small business that cultivates artisan grain methods to create premium, fresh pasta, sold under his Dumpling & Strand brand. He, too, discovered a need for AURI’s services.

“AURI was extremely valuable, as they were able to corroborate on the nutritional information I’d developed,” he says. “Their analysis of my formulations made it easier to proceed with confidence.”

The staff at AURI relishes these kinds of opportunities.

“Helping food entrepreneurs like the tenant partners at NE Food District is spot-on with our mission,” says AURI executive director Shannon Schlecht. “There’s strength in innovation districts comprised of companies in close proximity that can share best practices, collaborate and cultivate a culture of success. AURI expects to have an ongoing presence at NE Food District and be an essential element in its scope of services.”

Schlecht also identifies a huge benefit to food entrepreneurs located in Greater Minnesota.

“When those food businesses from outside the Twin Cities need to travel into the metro area, they now have one hub to which they can go to access resources or conduct meetings,” he says. “This access could be a far better arrangement than scampering all over town or moving from coffee shop to coffee shop.”

Glass appreciates the partnership, too.

“I’ve looked, and nowhere in the nation have I found the type and level of technical support food entrepreneurs can get from AURI,” she says. “And AURI services are affordable. For example, instead of paying \$2,500 for a Nutrition Facts label, AURI can assist in creating a label for less than 10 percent of that. AURI makes the barrier much lower.”

All of this adds up to moving Midwest Pantry closer to its ultimate goal: to make Minnesota the nation’s go-to location to start and grow a food company.

“The idea of Midwest Pantry and the NE Food District is to connect and pay it forward,” she says. “It’s important that we’ve created a common space where entrepreneurs can affordably develop their products and get help to successfully bring them to market. But the more valuable accomplishment may be that we’ve established a base where entrepreneurs can connect to network and share ideas. I’m amazed at the extent to which companies are willing to help one another. Fostering this type of interaction is what we’re all about.”



The NE Food District facilities include developmental kitchens for small businesses and entrepreneurs to use while perfecting recipes or working on scaling up production.



PHOTOS BY ROLF HAGBERG

AURI's Senior Scientist, Coproducts Al Doering inspects the oil and byproducts from the new seed press.



Byproducts like this, which are left over after pressing oilseeds, have significant value in animal feeds.



BY AURI

It has taken a lot of work, dedicated hours and collaborative programs and resources from its creation in 1989 to where it is today. The amount of time, effort and resources is paying off.

AURI is experiencing an explosion of innovative agricultural products. The focus areas of food, coproducts and biobased products are growing, and significant increase in AURI's workload of clients, initiatives and projects.

Strategically, AURI has committed additional resources to meet the demand, but to also proactively anticipate what future needs the agricultural economy and producers. To help achieve this, AURI has hired new and additional staff and has plans to expand its organization's mission.

While the equipment and site upgrades are instrumental in meeting the demand, quick to point out the greatest resource and support of AURI brought on board include Riley Gordon, Monte Koshel and Jason Robinson. They bring a new skill set to the teams they serve.

RILEY GORDON

Riley Gordon joined AURI in July 2017 to serve as an engineering and technical assistance. His background in physics and civil/electrical engineering allows him to be a resourceful problem solver. Gordon offers a unique viewpoint to projects and challenges that AURI faces. Gordon is focused on one of the four focus areas of AURI: food, coproducts, biobased products and energy. He's involved on various oil pressing projects, including smaller seeds that require additional preparation to successfully process the seed components.

Gordon also helped with a biobased project focused on a sustainable material by collecting and coding asphalt cores for a third party blind study. He analyzed the data results, including statistical analysis of the data.

Along with other AURI staff, Gordon pursues the technical development of industrial hemp products, including HempCrete, an environmental friendly performing insulative material made from hemp hurd, a byproduct of hemp processing.

Gordon is quick to admit that he is just learning the ropes of the industry from his colleagues, especially Al Doering, who Gordon describes as a mentor during his brief time with AURI. Gordon sees the strong, professional relationships paramount to the strengths and growth of AURI. According to Gordon, "I've worked hard over the years to do great work for their clients and build professional relationships."

MONTE KOSHEL

AURI welcomed Monte Koshel as Project Manager earlier this year. Koshel's family operated a cattle and small grain farm in northern Minnesota. It's remarkable for him to see how much has changed in the farm industry over the years because of technology and techniques.

As Project Manager for AURI, Koshel leads and coordinates projects, to plan, execute, and deliver AURI projects, as well as secure funding and explore opportunities. According to Koshel, "My main goal at AURI is to provide support within our organization to entrepreneurs in our network. I want to help their ventures. My goal is to connect those people who can create value and foster ideas to success."

As AURI grows, Koshel hopes his role as project manager will continue to be delivering impactful outcomes. "Farmers are some of the most innovative people. That entrepreneurial spirit is what drives the ag industry forward. I look forward to working with the AURI teams to help other farmers. It's exciting to work with people inside and outside the organization who are passionate about new ways to use familiar products."

JASON ROBINSON

As Project Development Director, Jason Robinson acts as the liaison to potential clients in the food focus area. His goal is to educate and help a client project fits with the mission and capabilities of AURI. When synergy is found, Robinson works with the client to define the project for their stage of business and match them with the right AURI team. He has significant experience in business and brand building, and helps clients to build a stronger, more sustainable business model. His client-first approach is really all about building a relationship. He believes AURI is about empowering each client with the resources to move their passion ahead – customized to each client's unique needs.

Robinson's first exposure to AURI was during a session at the AURI event in October, 2017. According to Robinson, the combined strengths of a nonprofit structure, and technical aptitude put it in a unique position to drive the innovation ecosystem in MN forward, but also provide a technical voice.

GROWING TO MEET CLIENTS' NEEDS

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Above: AURI recently added an Aspirator to its Coproducts Lab. They help to complete fast separations of material based on their densities.



Left: Coproducts Pilot Lab Assistant Abel Tekeste

Expansion And Updates In Sensory And Coproduct Pilot Labs

For years, the AURI labs have operated effectively within a small footprint. However, expanding the physical space of the coproducts pilot lab and creating improved sensory capabilities will provide both a more efficient environment as well as improved resources to better serve clients and industry.

Sensory Lab

A new, shared sensory lab will be located in the Individualized Learning building on the Southwest Minnesota State University (SMSU) campus, in Marshall. Currently, the Culinology Department uses the space for a sensory course. AURI and SMSU hope the new lab will open by the end of 2018. Included in this endeavor are new sensory booths, an upgraded room for food preparation and the data collection equipment to record input and conduct statistical analysis. The purpose of this lab is to better meet requested AURI client needs for assessing their products.

This lab will allow AURI to give clients qualitative and quantitative data about certain sensory aspects ranging from taste, sight, smell, etc. This data can then be used by clients to adjust their product to better reflect consumer preferences.

In addition to the sensory lab, AURI plans to make improvements to the functionality of its Marshall site by upgrading security and safety equipment. In addition, AURI enhanced its meat lab in 2017 by adding a developmental kitchen within the space.

The sensory lab addition will improve AURI's work with food clients and continue to strengthen the relationship with SMSU as both organizations will share the facility for both educational purposes as well as providing a new technical service to AURI's food clients.

Coproduct Pilot Lab in Waseca

AURI's Pilot lab activities continue to grow along with the increased scale of research conducted by its scientists and staff. To address these needs, various lab improvements are coming to the facility in Waseca, MN. AURI is exploring an expansion to the footprint of its existing lab located at the University of Minnesota Southern Research Outreach Center to add space for new equipment and research operations. This expansion will allow for more efficient equipment operations and clean up while adding a 'food grade' production room for oil extraction.

This expansion will nearly double the current footprint of the pilot lab while also upgrading belt conveyors and material handling equipment to improve processing, research and development efficiency. Some of the new equipment recently added to the AURI Coproduct Pilot Lab includes:

Cold Oil Press used to extract oil, without using solvents, from a variety of oilseeds. Along with the oil, a valuable coproduct results in the press cake or meal from the pressed seeds. AURI works with many clients to investigate new oilseeds and the potential value for a variety of applications ranging from new perennial cover crop developments to high-value specialty markets for the oil and meal. A variety of projects utilize the oil press, including the need to collect oil from perennial and annual oilseed crops to evaluate its nutritive and performance as a food-grade oil, and press cake meal from oilseeds that can be utilized for everything from human applications to new protein sources for livestock. With the high demand for this piece of equipment, and requests to produce a food-grade oil for further product development, AURI opted to include a small food grade processing room in its expansion plans.

Multi-Aspirator. The industry uses aspirators to complete fast separations of material based on their densities. For example, during the processing of some shelled nuts, the shell is cracked and then run through an aspirator where the seed falls through while the lower density shell is air-swept away from the heart or core. This new piece of equipment will allow AURI to support numerous projects it could not assist with in the past.

AURI's Coproduct Pilot Lab will also add a **new dryer**. AURI clients often develop value added opportunities that require some level of drying due to high moisture content. The addition of a new dryer will give AURI the capability to expand product development for wet coproducts and provide valuable data to the client.

Small Investment

Big Impacts



BY DAN LEMKE

USDA Grant to AURI Yields Impressive Returns

Sound investments should generate a positive return, and a federal program providing support for rural economic development through AURI is producing returns most investors could only imagine.

AURI was recently awarded a 2018 U.S. Department of Agriculture (USDA) Rural Cooperative Development Grant (RCDG) through a nationwide, competitive application process. It's the fifth time AURI successfully accessed funds through the program.

The RCDG program works to improve rural economic conditions by helping individuals and businesses start, expand or improve rural cooperatives and other mutually-owned businesses through Cooperative Development Centers. AURI began operating its Rural Cooperative Development Center in 2010.

"Overall, the RCDG aligns well with AURI's mission of adding value to crops and livestock and fostering long-term economic benefit to rural Minnesota," says AURI Senior Project Strategist Michael Sparby.

"The RCDG program lies in the sweet spot between the missions of AURI and USDA Rural Development; to create and to support existing rural businesses and cooperatives, resulting in economic impact," says Lisa Gjersvik, AURI senior director of strategy management.

AURI uses the USDA funds through the Cooperative Development Center to provide business development support, technical assistance, coordination of local and state rural development activities, due diligence assessments, technical and economic feasibility analysis, cooperative development strategies, and strategic networking opportunities. These services are offered in the areas of local foods marketing and distribution, coproduct utilization, biobased product development, feed processing, food processing, sustainable crop value chain development and renewable energy.

"It's been an extremely good partnership with the USDA given the outcomes we've been able to generate while leveraging the funds from the award," Sparby says.

Big Bang

AURI was also selected as an RCDG recipient in 2017. The USDA award was \$200,000 to which AURI added another \$70,000. The grant awarded in 2016, and implemented in 2017, provided technical assistance in product and process development to 22 entities across 23 different projects.

Businesses assisted during 2017 reported many positive impacts, which are sizeable as shown in the 2017 RCDG Project Outcomes figure.

"It's hard to find other programs that would see that kind of return from a \$270,000 investment," Sparby contends. "Job creation, business development and cooperative formation are important, but wealth creation also has a major impact on the economy and rural communities."

The Center's first three completed RCDG grants led to the development of 30 projects with 21 separate rural business entities, including 10 producer cooperatives representing a total of 11,134 producer members and nearly a dozen other businesses. The previous projects also created or retained dozens of rural Minnesota jobs.

Creating Value

Among the rural entities receiving assistance through the RCDG program is the Valley Organic Beet Growers, a farmer group headed by Lynn Brakke. The farmers from the Moorhead, Minnesota area have worked for several years on a value-added feed product for organic dairies. The growers are researching ways to better utilize whole organic sugar beets that create new market opportunities.

Sugar beet coproducts are often fed to livestock, but the Valley Organic Beet Growers are investigating ways to dehydrate and process whole sugar beets, so the beets can be stored, shipped and mixed into livestock rations.

"Once we perfect the product, we know the market is there," Brakke says. "We need to find the right process for slicing, shredding and drying the beets so that we don't diminish their feed value."

Brakke says sugar beets are a common livestock feed in Europe and in some southern states where beets can be harvested daily. That's not possible in northern climates where beets freeze and thaw, making them unusable for feed. However, dehydrating beets from 70 percent moisture to 20 percent moisture, so they can be stored and shipped, opens a whole world of opportunity.

"We will be attacking regional markets first," Brakke says, "but there is potential nationally and even overseas."

Organic dairies need organic feed options. Those that produce grass milk, or milk from cows on non-grain diets, struggle with lower milk production because grains typically provide added energy cows need

to produce milk. Although the farmers are paid a premium for grass milk, those premiums don't always offset losses due to lower production. Sugar beets provide the necessary energy to boost milk production and can be fed as part of a non-grain diet.

In 2017, AURI assisted the Valley Organic Beet Growers with product and process testing. AURI also connected the farmers to necessary resources to shepherd their idea forward.

"If we didn't have the RCDG funding, as farmers, we probably wouldn't have pursued this as quickly. We don't have line items in our farm budgets for this sort of testing," Brakke says. "Because of the funding and AURI's expertise in connecting the dots, we're creating a whole new market because this is a product that doesn't currently exist."

Brakke says once the dehydrating process is perfected and the process ramps up, it's likely they'll need more organic beet growers to fill demand.

"We want to include beets in our rotation," Brakke says. "Once we have the process perfected, we want a marketing company to take over the marketing, packaging and shipping. We see this as an opportunity for us and for others."

Work on the Valley Organic Beet Growers project is continuing as part of the 2018 RCDG grant.

Birds on Grass Beds

Minnesota has a thriving turf grass seed industry with dozens of growers producing varieties like Kentucky bluegrass, ryegrass, timothy and other specialty grass seeds, primarily in northern Minnesota. Northern Excellence Seed is a farmer-owned cooperative that produces and processes a variety of grass seeds. They also generate substantial amounts of coproducts during the cleaning process at their conditioning plant in Williams, Minnesota.

Conditioning the seed separates the hulls, chaff and stems from the desired grass seed that is then bagged and sold. About 20 percent of what the farmers capture in the harvest process is removed as screenings during the conditioning process. The screenings have little value and are often burned as a method of disposal.

Northern Excellence worked with AURI through the RCDG program to identify



potential uses for the screenings. While they work as a biomass fuel, both parties thought there may be higher potential using the screenings as poultry bedding.

Research at AURI's Coproduct Utilization Lab in Waseca, Minnesota found the screenings substantially reduced the release of ammonia. This is important because high levels of ammonia in barns can have a negative impact on the performance of birds including turkeys and laying hens. Because Minnesota is such a large poultry producing state, there is tremendous potential for using the grass processing coproduct as bird bedding.

"This opportunity is very exciting for us because we are always on the lookout for ways to add value to our products, including the screenings," says Northern Excellence Seed General Manager Brent Benike. "For us, the screenings really have no other use. It can be a nuisance and a cost to dispose of the screenings. To potentially turn them into a revenue stream is exciting."

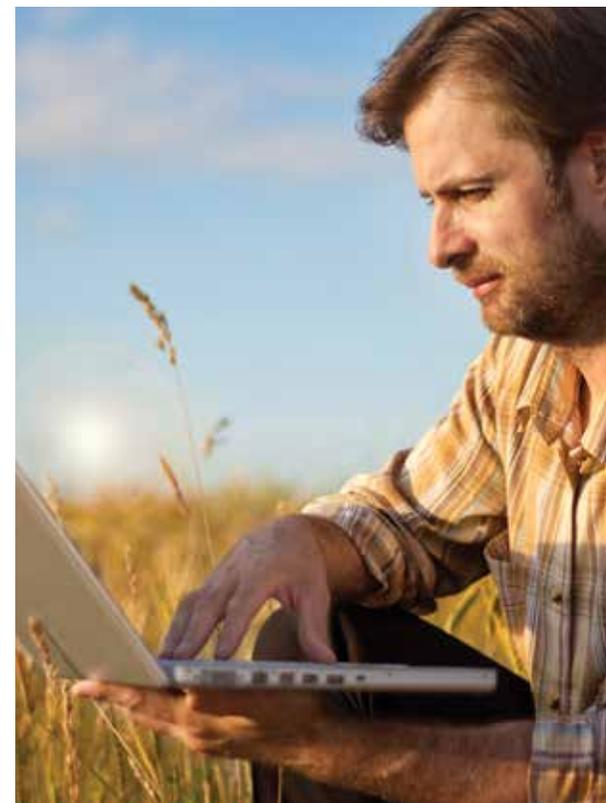
Benike says his company and several other seed conditioners in the region collectively produce about 10 million pounds of screenings annually.

Alan Doering, AURI senior scientist for coproducts, tested multiple poultry bedding materials including wood shavings, sunflower hulls, corn cobs, barley hulls and grass seed screenings. Doering says the grass seed screenings controlled ammonia release better than anything currently used as poultry bedding.

"The screenings show excellent potential as bedding for poultry," Doering says. "It also shows that by being resourceful, Northern Excellence may have a new market for their coproducts."

On-farm performance trials are expected in 2018.

Because of the funding and AURI's expertise in connecting the dots, we're creating a whole new market



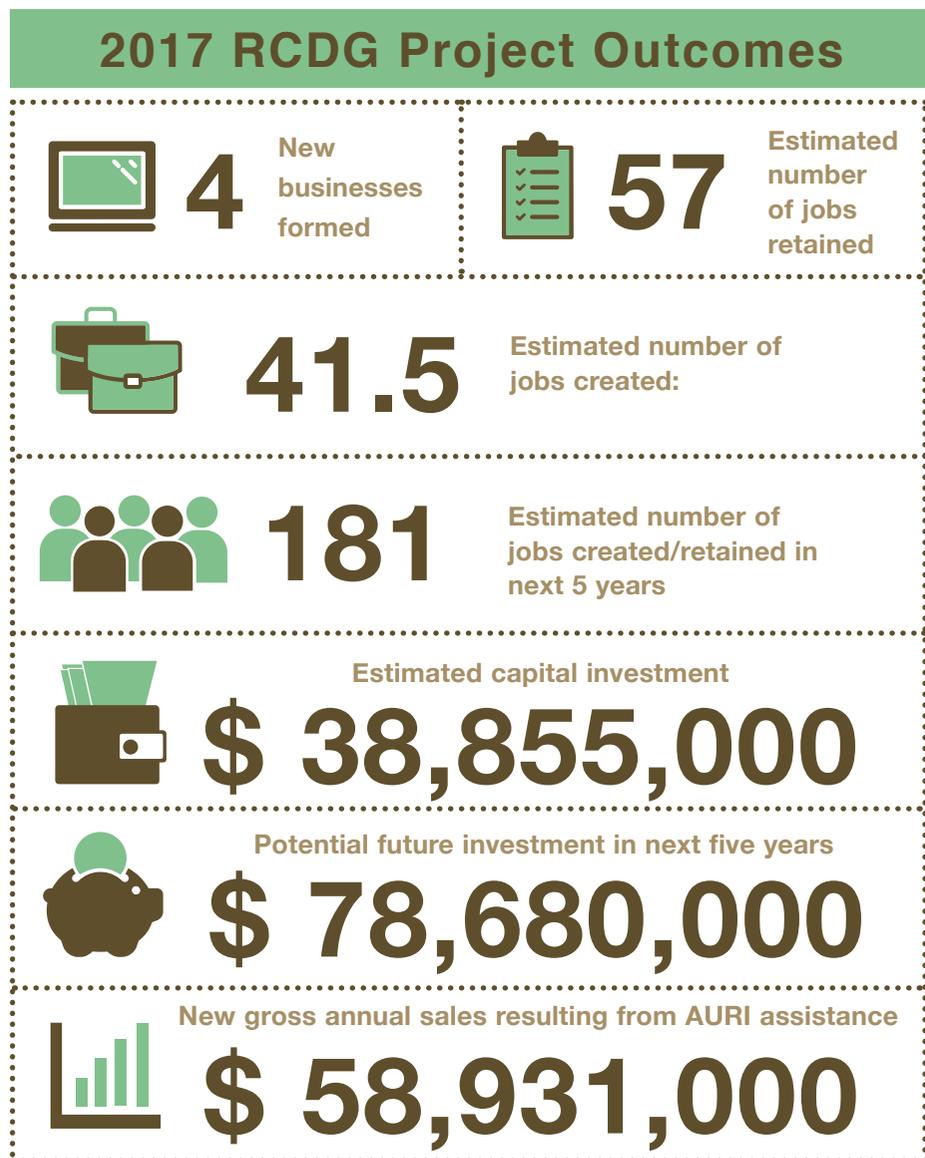
because this is a product that doesn't currently exist.

For 2018

Sparby says there are 13 approved ventures already moving forward for 2018. Those projects are divided between cooperatives and rural businesses. He anticipates the total number to surpass 20 projects before the year is out.

Although projects are already underway, Sparby says it's not too late for Minnesota businesses or cooperatives interested in assistance from the RCDG program to participate. They can learn more about the program and the application process by visiting the AURI website at www.auri.org.

"It's a great program that aligns perfectly with AURI's mission. We can implement the award and program seamlessly because it leverages and enhances what we are already doing for rural Minnesota," Sparby says.



Reported Outcomes by Companies Assisted

Food Macro Trends

BY JASON ROBINSON

Trends in food can be a fickle thing – some are multiyear in duration, some are fads, which are here today, gone tomorrow. They can be classified as either “macro” or “micro,” the definition of which is influenced by both duration and underlying consumer motivation (or mindset) toward the trend. As a general rule, micro trends tend to be specific and of short duration (one to two years), whereas a macro trend is multiyear, more general in scope, and is the motivation for the consumer’s mindset. Macro trends also tend to demonstrate a bit more overlap with each other versus micro trends. For example, compare the low carbohydrate (Low Carb) macro trend versus the Atkin’s Diet micro trend from the mid 2000’s – Low Carb was (and, to some extent, still is) a consumer mindset that influenced most purchase decisions, whereas the Atkin’s Diet was a shorter term, specific application of that trend.

With that background in mind, one of the most prominent macro trends influencing consumer behaviors today is a distrust of big food companies. In the most general sense, the term Big Food refers to the collection of very large industrial packaged food producers, wielding large influence over market dynamics and public policy – companies such as PepsiCo, Kraft Heinz, General Mills, Nestle, etc. Big Food has gained this influence over the past 50 to 60 years alongside the rise of the large, central supermarket that has been driven by “middle aisle” sales of packaged foods. That dominance is being challenged today as consumers’ trust in Big Food is eroding due to a number of factors, some of which have evolved into macro trends themselves:

- **A growing awareness of the link between health and food:** Whether real or perceived, purchase trends indicate that shoppers are moving away from the “middle aisles” and more towards the perimeter. In the May 21, 2015 article in Fortune magazine, Special report: The war on Big Food, “the idea of ‘processing’—from ancient techniques of salting and curing to the modern arsenal of artificial preservatives—arose to make sure food didn’t make us sick. Today many fear that it’s the processed food itself that’s making us unhealthy.”
- **Supply chain and manufacturing transparency:** Take the biotech labeling issue, as an example – despite regulators and established scientific organizations declaring the safety of such modifications, consumers still wanted information via the packaging that indicates the presence of such ingredients. This resulted in the passage of the National Bioengineered Food Disclosure Law.

- **Product and ingredient simplicity:** Availability of information via the internet and social media has led consumers to question the need for the unpronounceable chemicals they see on labels of packaged food, believing that simple, understandable ingredients are fundamentally healthier.
- **Lack of consumer belief in brand authenticity, mission, and/or purpose, especially from Millennials:** Amanda Topper, a Food Analyst at Mintel (the world’s largest market intelligence agency), states in an October 29, 2015 report, “With growing distrust and a greater desire for transparency from food manufacturers, Millennials want brands to form a genuine, authentic connection with them and brands should recognize the impact Millennials have on their businesses.” Stated simply, the rise of Millennials’ influence has demonstrated a clear link between personal philosophy and the food they are willing to purchase.
- **Access to and influence of social media:** Increased social media use has led to online conversations about what to eat and what to avoid. This has led to the ability of self-proclaimed food experts/advocates to create enormous movements cultivated by connection to their personal food philosophies.

Big Food has taken notice of the macro trends, as evidenced by corporate acquisition strategies evolving away from building larger economies of scale to drive down cost of goods. Today, there is increased strategic focus on acquiring smaller brands operating in non-traditional sectors – natural, organic, etc. In addition, new brands are bringing something to Big Food beyond their product credentials – the DNA of the food entrepreneur, which includes both management and operational agility to respond to consumer demands, as well as a clear and obvious focus on their mission.

Consumers’ distrust of Big Food is a macro trend. In fact, consumer purchase behavior indicates that the trend is actually accelerating.

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.*



Using Cover Crops to Suppress weeds in organic farms

The OFIA Science Prize was recently awarded to Dr. Hiroshi Uchino from the Tohoku Agricultural Research Center, for his work on the use of cover crops for weed suppression. Weed damage is one of the most serious causes of significant crop yield loss in organic farming. The use of cover crops is one method used to prevent weed damage, but sometimes cover crops damage main crop growth as well as weed growth. Dr. Uchino conducted field studies for 10 years with soybean, maize and potato to achieve stable weed suppression in organic farming. This included carefully studying the impact of vegetation cover ratio and seed weight, sowing dates and interseeding.

The research team has developed a non- agrochemical forage soybean production system using the cover crop technique. This production system is now being disseminated to forage production farmers in the Tohoku region, and the findings will help for organic farmers to use cover crops for weed suppression based on scientific knowledges not only in Japan but also in other countries.

ifoam.bio



Scientists make butterfat breakthrough for baby formula

Scientists in Ireland have made a breakthrough in making cow’s milk in infant formula more suitable for babies. This is done through modifying the fat to be similar to the fat found in human breast milk. The development was made by scientists at Teagasc and Food for Health Ireland (FHI), an Enterprise Ireland Technology Centre.

The principle investigator, Dr. Sean Hogan, said: “What we developed is a human milk fat substitute that goes a significant way to reflecting human milk fat – but that includes a high proportion of milk fat from cow’s milk which tries to minimize the amount of palm oil in it. What we’ve done is we’ve blended some of these ingredients together and modified them with a particular type of enzyme, lipase enzyme, to give an overall total fatty acid composition similar to milk.”

Hogan added that the structure of these milk lipids is closer to human milk than normally present in formula products based on vegetable oil alone.

“There’s a desire on the part of a lot of the big companies now to either use sustainably-produced palm oil or reduce the amount of palm oil that they’re using because of the environmental issues like deforestation etc.”

agriland.ie



Some Greenhouses are Utilizing Landfill Gas

British Columbia mandates that 75 percent landfill gas collection efficiency, and to comply, landfills are partnering with greenhouses.

An example is the Vancouver Landfill, which formed a relationship with Village Farms International, who design and operate of greenhouses in North America. Vancouver Landfill sells about 55 percent of its gas to Village Farms, which uses it to heat one of its greenhouses while generating electricity for Canadian electric utility BC Hydro.

Heating is among a greenhouse’s highest expenses, and it requires a lot of energy for a relatively small footprint. Further, they typically prioritize reducing their carbon footprint, so a cheaper, cleaner alternative to natural gas appeals to them.

waste360.com

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

Corn is technically categorized as a:

- a. Fruit
- b. Vegetable
- c. Grain
- d. Nuisance when it gets stuck in your teeth

Answer: c

Renewable Energy

Biodiesel is a renewable, biodegradable fuel manufactured domestically from:

- a. Vegetable oils
- b. Animal fats
- c. Recycled restaurant grease
- d. All of the above

Answer: d

Coproducts

Which of the following can now be produced using soy?

- a. Astroturf
- b. Paintballs
- c. Hydraulic Fluids
- d. Spray Foam Insulation
- e. Fire Logs
- f. All of the Above

Answer: f

Biobased Products

The first Bibles, maps, charts, Betsy Ross's flag, the first drafts of the Declaration of Independence and the Constitution were made from:

- a. Parchment
- b. Hemp
- c. Cotton
- d. Birchbark
- e. U.S. Government Archives

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 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.

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2nd annual AURI New Uses Forum

April 11-12, Plymouth MN



If you haven't registered for the upcoming New Uses Forum on April 11 and 12 in Plymouth, MN, there's still time to lock in your spot for this value-added event.

This year marks the second time the Agricultural Utilization Research Institute brings together some of the most knowledgeable individuals from throughout the new uses and value-added agriculture sector. Like its previous iteration, the 2018 New Uses Forum offers a variety of topics to be discussed by panels and keynote speakers, however this year's event will focus on different topics and has some new additions for participants to enjoy.

First, there will be a special reception on April 11 for all registered attendees, where they can network with guest speakers, VIPs, and entrepreneurs who will discuss their experiences with value-added products. The following day, April 12, includes a keynote address by Sanjeev Krishnan, the Managing Director of S2G Ventures (s2gventures.com), and Matt Carstens Senior VP, Land O'Lakes SUSTAIN, as well as four panel discussions on topics ranging from biobased innovation to the nexus of food and health. In addition, the day will be broken up by a number of networking breaks and an entrepreneurial showcase of Minnesota companies, hosted by Techstars Managing Director, Brett Bohl.

Agenda

April 11	5:00-8:00	Welcome
April 12	7:30-8:30 am	Registration/Breakfast Networking/Booths
	8:30-8:40 am	Welcome
	8:40-9:25 am	Keynote address by Sanjeev Krishnan, Managing Director of S2G Ventures
	9:25-10:35 am	Biobased Innovations Panel
	10:35-11:05 am	Networking Break
	11:05 am-12:15 pm	Innovations in Coproducts Panel
	12:15-1:15 pm	Lunch and Networking
	1:15-2:15 pm	Industrial Hemp Innovations Panel
	2:15-2:45 pm	Entrepreneurial Innovation Showcase
	2:45-3:15 pm	Networking Break
	3:15-3:50 pm	Keynote address by Matt Carstens Senior VP, Land O'Lakes SUSTAIN
	3:50-5:00 pm	Nexus of Food and Health Panel
	5:00-6:00 pm	Reception and Networking

"While we created this event to build on last year's forum, I felt it was important to include some new offerings and opportunities for attendees as well," said AURI Executive Director Shannon Schlecht. "With so many other value-added events to choose from, I feel it's critical to offer something new each year to keep AURI's forum fresh and interesting."

At the same time, the 2018 forum looks to keep all the successful elements from the past, most importantly the audience participation. Each panel will include a Q&A section where everyone can pose questions, or request further information of the group. This means, there will be opportunities for participants to help shape the conversation by providing live feedback to the panels and sharing their own experiences on the topics covered.

"Everyone at AURI is thrilled about continuing the forum, and by extension, continuing the conversation about many of the innovations and advances that are creating new opportunities in value-added agriculture" says Schlecht.

To learn more about this exciting event, register and take advantage of the special room rates, visit auri.org.

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