



Ag Innovation News

Apr-Jun 2014, Vol. 23, No.2

The newspaper of the Agricultural Utilization Research Institute



Helping make +healthy habits+

Natural foods company grows from
start-up to seven-figure sales

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CUTTING THE COST OF FEED

Minnesota alfalfa co-op develops economical feed pellet



BY LIZ MORRISON

Soaring hay prices sparked innovation at a Raymond, Minn., feed company.

Short supplies of alfalfa and skyrocketing prices forced Minnesota Valley Alfalfa Producers (MnVAP) to cut production of alfalfa feed pellets by more than 40 percent in 2013. But the co-op rebounded by developing a more economical and nutritious substitute for alfalfa pellets.

"We saw a need and an opportunity," says Zayna Eischens, MnVAP chief operations officer.

Now, MnVAP is manufacturing a new, mixed-fiber feed pellet that's higher in energy and lower in cost than alfalfa pellets. In University of Minnesota feeding trials on dairy calves, the blended-fiber pellets outperformed both alfalfa pellets and a standard diet.

"We were trying to create a better pellet at a lower cost," says longtime alfalfa producer Donn Larson of Madison, Minn., a member of the MnVAP board of directors, "and we succeeded." The new product will boost MnVAP's volume of pellets marketed by about 25% this year.

"The results of the feeding trial were very positive," says Becky Philipp of AURI, "providing solid data to support the pellet as an effective feed alternative. MnVAP has a great new product, which will strengthen their economic vitality. And their customers have a lower-cost feed option."

Caught in a price squeeze

Over the past two years, alfalfa prices have more than doubled, topping \$300 per ton. Values have been pushed up by increased demand from Texas and other livestock regions in the Southern Plains, where pastureland has been ravaged by drought. Meanwhile, competition for cropland from high-priced corn pushed down alfalfa production. "With \$7 corn," Larson says, "a lot of acres of alfalfa were plowed up."

As the cost of alfalfa became prohibitive for livestock growers, MnVAP's production dropped from 38,000 tons of alfalfa pellets a year to 21,000 tons in 2013, Eischens says. "We needed to find a feed product that was more economical for our customers," Larson says. MnVAP's customers include large cattle feedlots and cow-calf operations throughout the U.S., as well as dairy, lamb, hog, and fish producers.

AURI helps

The manufacturer turned to AURI for help devising a replacement pellet. AURI had helped the 141-member cooperative get organized in 1994 and has worked with the company on other projects since.

MnVAP's customers wanted an alternative feed pellet that provided the same 17% crude protein as the company's alfalfa pellet, says Al Doering, AURI's senior associate scientist for coproducts. "We worked with MnVAP to develop a blend of ag fibers that was equivalent to the nutritional value of alfalfa pellets."

"We actually made a better pellet as far as energy is concerned," says Larson. The blended-fiber product contains nearly 5% fat, compared to 1.5% fat in the alfalfa pellets. Fiber content of the blended pellet is about 25% lower than the alfalfa pellet.

Doering tested different pellet formulations for bulk density and durability, qualities that are important for easy handling and shipping. He also helped with manufacturing set-up at the plant.

"AURI was a big help with this," Larson says.

Performance testing

"We also wanted feedback on actual performance before we started selling the product," Eischens says. A USDA Rural Cooperative Development Grant helped pay for feeding trials last summer at the University of Minnesota Southern Research and Outreach Center (SROC) in Waseca, Minn.

The 56-day study, led by U of M animal scientist Hugh Chester-Jones, compared three diets for dairy calves:

- standard grower heifer diet of grain plus hay;
- grain plus alfalfa pellets as a partial replacement for hay;
- grain plus blended-fiber pellets as a partial replacement for hay.

Variables measured in the study included feed intake, daily weight gain and feed efficiency. "This was a short study to give us an idea of acceptance and performance," says SROC scientist David Ziegler, who managed the trials.

The study results have not been published. However, partially replacing hay in a grower diet with alfalfa or blended pellets enhanced heifer performance compared to those fed a standard grower diet, says Chester-Jones. "Heifers fed the blended pellet diet performed better than those fed the alfalfa pellet diet. Some of these difference may be related to the higher energy, lower fiber levels and greater acceptance by heifers fed the blended vs. alfalfa pellet diets."

The calves "liked the blended pellet best," Ziegler adds, perhaps because of the higher fat content.

The blended-fiber pellets tended to have a few more fines than the alfalfa pellets, Ziegler says. But that probably wouldn't be a problem for feedlot operators who include the pellets as part of a total mixed ration, he says. "It definitely would have a market."

Price advantage

MnVAP began making the new feed product late last year. The company will manufacture 5,000 tons of blended-fiber pellets in 2014, Eischens says. "All of that has already been sold."

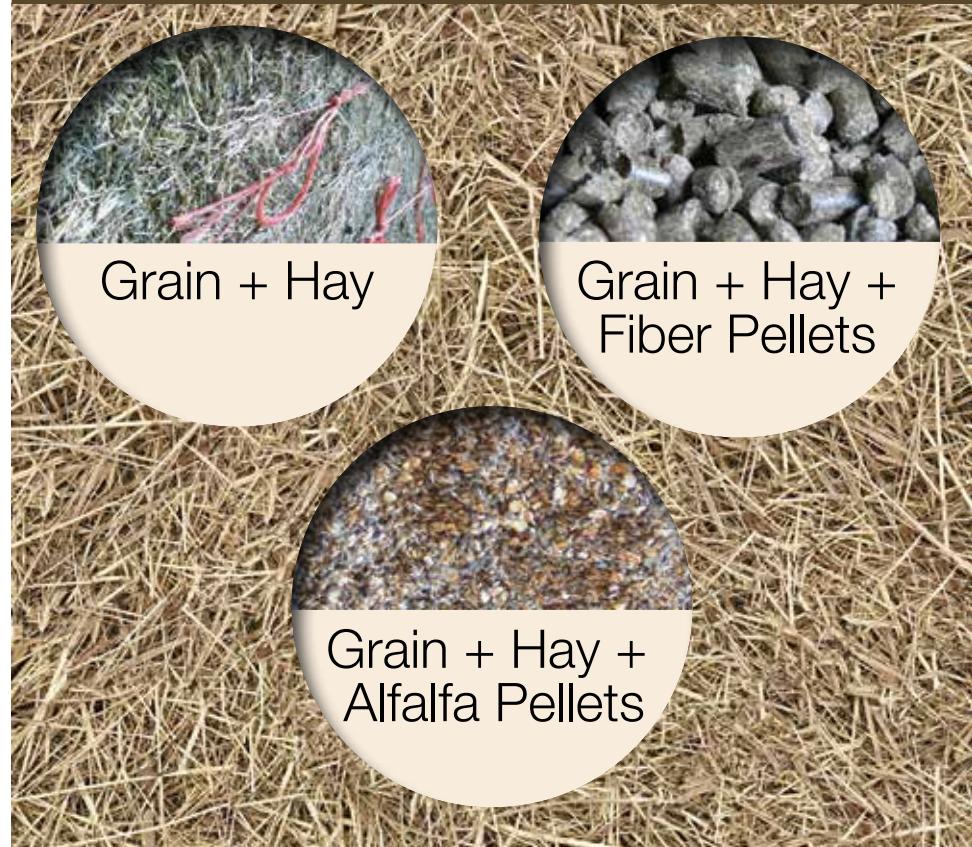
The company plans to double or triple blended-fiber pellet volume in 2015. "In a year's time, I expect our sales of the blended pellets to equal straight alfalfa pellet sales," Larson says.

What are customers saying? "There's a lot of interest because of the nutrient package," Larson says.

The price is attractive, too. The blended-fiber pellets sell for \$20 to \$40/ton less than alfalfa pellets. "That's a significant cost advantage," Eischens says, "especially for large operations." MnVAP also sees an opportunity to market the blended-fiber feed pellet to smaller dairies and cattle feedlots in the region.

"We've had a really good reception, and compliments from customers." ■

Three diets for dairy calves



AURI and MnVAP

Idea to reality:

As alfalfa prices soared over the last two years, Minnesota Valley Alfalfa Producers (MnVAP) saw a need for a lower-priced substitute for alfalfa feed pellets.

AURI's role:

AURI helped the co-op develop, formulate, and test a lower-cost, blended-fiber feed pellet.

Outcome:

MnVAP will manufacture 5,000 tons of the new feed pellets in 2014, and plans to triple production in 2015.

Partners:

University of Minnesota Southern Research and Outreach Center; USDA Rural Cooperative Development.

EFFECTS OF BLENDED-FIBER FEED PELLETS ON GROWING DAIRY HEIFER PERFORMANCE

Performance Measures*

	Standard Diet ¹	Alfalfa Pellet Diet ²	Blended Pellet Diet ³
Average Daily Gain (lbs/head)	2.03	2.26	2.49
Pellet Intake (lbs/head)	0.0	236.3	249.0
Total Feed Intake (lbs/head)	603.5	695.8	708.2
Gain/Pound of Feed (lbs/head)	0.19	0.18	0.20

*84 dairy heifers from 4 to 6 months of age

1-16% crude protein corn and pellet grain mix fed at 4.7 lbs/day for 56 days with hay

2-16% crude protein corn and pellet grain mix fed at 4.7 lbs/day for 56 days with 17% crude protein alfalfa pellets replacing a similar amount of hay

3-16% crude protein corn and pellet grain mix fed at 4.7 lbs/day for 56 days with 17% crude protein blended fiber pellets replacing a similar amount of hay

Dairy heifer calves fed a new blended-fiber feed pellet composed of alfalfa and other ag fibers grew faster and put on more weight per pound of feed than heifers fed a standard diet or alfalfa pellets. That's according to unpublished data from a 2013 study at the University of Minnesota Southern Research and Outreach in Waseca, Minn. The new feed, which is less expensive than alfalfa pellets, is manufactured by Minnesota Valley Alfalfa Producers (MnVAP), Raymond, Minn.

Source: Hugh Chester-Jones, University of Minnesota, 2013 study, from unpublished data

FILLING UP WITH E85

Benson co-op exploring ways to boost sales of higher ethanol fuel blends

BY LIZ MORRISON

A Benson, Minn., ethanol maker hopes a customer loyalty program will encourage owners of flex fuel vehicles to choose the yellow pump.

Chippewa Valley Ethanol Company (CVEC) is exploring ways to increase local sales of E85, the high-ethanol-blend fuel. The cooperative produces about 46 million gallons of ethanol a year. CVEC also blends E85 at the plant and distributes the fuel to about 30 gas stations in west central Minnesota.

AURI helped the company do a market study, asking flex fuel vehicle owners about their E85 buying habits and their interest in customer loyalty programs, such as reward cards.

"We wanted to get a better understanding of consumer motivation, and what it would take to sell more E85," says Mike Jerke, general manager of the 900-member ethanol co-op. CVEC plans to use the proprietary information to create a new E85 customer loyalty program.

In the past, one-time E85 promotions have been well received by consumers, says Kelly Marczak, director of the American Lung Association's Minnesota Clean Air Choice Program. Events such as E85 customer appreciation days or frequent fuel cards reward regular E85 buyers, and "provide an incentive for new customers to give E85 a try and continue using it to get that reward."



PHOTOS BY ROLF HAGBERG



**AURI
and CVEC**

Idea to reality:

Chippewa Valley Ethanol Company (CVEC) in Benson, Minn., an E85 blender, wanted to develop a customer loyalty program to spur sales of E85 at the west central Minnesota gas stations it supplies.

AURI's role:

AURI helped the company manage a market study to evaluate consumer attitudes to E85 and their loyalty program preferences.

Outcome:

CVEC will use the market study to develop a customer rewards program to further develop the market for E85.



A price-sensitive market

Fuel buyers are very sensitive to prices at the pump, Marczak says.

That was confirmed by the CVEC market study, which was performed by Minneapolis public relations firm Russell Herder. Consumers pay close attention to the price spread between regular unleaded gas and E85, Jerke says.

E85, which contains 70% to 85% ethanol, has less energy than regular gasoline, resulting in a mileage decrease of about 20%. When the price difference between E85 and gas is too narrow, many drivers of flex fuel vehicles stop pumping it, says Michael Sparby, senior project strategist at AURI.

In the last 12 months, for example, the monthly price spread in Minnesota has ranged from 8.8% to 23.61%, according to the website E85Prices.com. On Nov. 1, it averaged 19.8%, or \$0.64/gallon.

The price difference between E85 and regular unleaded also varies sharply by location. In October, for example, price spreads reported by consumers on E85Prices.com ranged from 3% to 27%.

For a time last summer, E85 at many Minnesota gas stations was \$1 or more per gallon cheaper than regular, which induced many consumers to choose the high-ethanol blend, Marczak says. E85 volume jumped to two million gallons in July and August, twice the monthly sales in the first quarter, the Minnesota Commerce Department reports.

This shows that at the right price, Minnesotans who drive flex fuel vehicles will choose clean, renewable, locally produced E85, Jerke says. The marketing study found that "when consumers see a price spread that's significant — 25% to 30% — they are motivated to use the product."

Access to pumps a barrier

But a significant barrier to E85 expansion is the lack of E85 pumps, says Tim Rudnicki, director of the Minnesota Biofuels Association, a trade association. Nationally, just over 2,350 gasoline stations dispense E85, according to the U.S. Department of Energy. That's less than 3% of U.S. stations.

"Minnesota leads the nation in the number of E85 outlets and pumps," with about 350 stations, Sparby says. But the number of Minnesota dispensers has been flat since 2009, especially in rural Minnesota, where average monthly E85 sales per station are less than half that of metro stations. However, "We are seeing renewed interest," Marczak says, "and quite a few new retailers are adding E85 pumps in the second half of 2013."

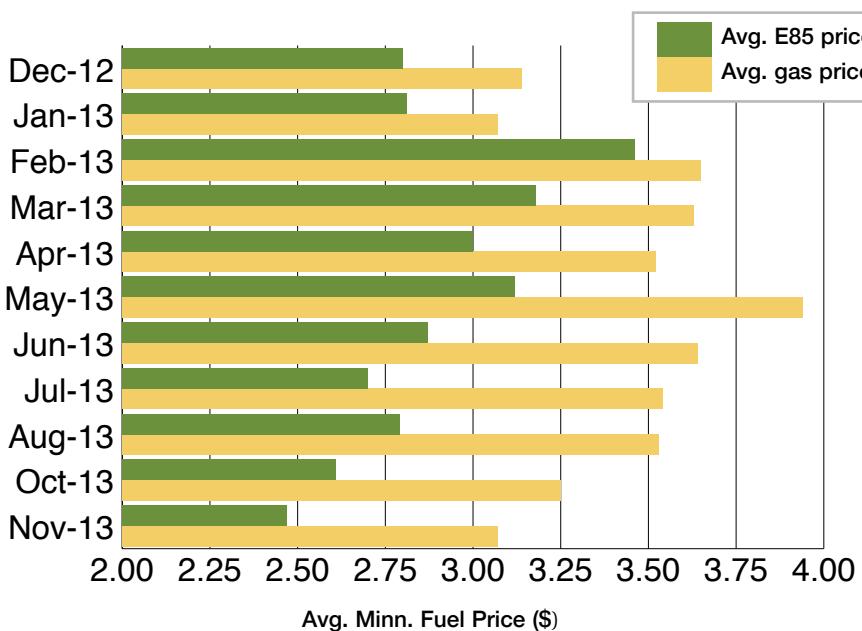
E85 can only be used in flex fuel vehicles, which are designed for high ethanol blends. Auto makers offered 62 flex fuel vehicle models in 2012, according to the U.S. Department of Energy. There are more than 14 million registered flex fuel vehicles on U.S. roads today — about 300,000 in Minnesota, the American Lung Association in Minnesota estimates.

This fleet has the capacity to consume at least 6.6 billion gallons of ethanol annually, according to a 2013 report from the Center for Agricultural and Rural Development at Iowa State University. Yet, despite the number of flex fuel vehicles on the road, "a lot of flex fuel vehicle owners don't know they have the option of using E85," Rudnicki says.

CVEC's market study also found "a need for more education about E85," Jerke says. For example, consumer interviews revealed that many drivers didn't understand that flex fuel vehicles can switch back and forth between gasoline and E85. "They don't need to use E85 every time they fill up." That type of information could easily be conveyed with better marketing and pump displays, Jerke says.

"We think there are great opportunities." ■

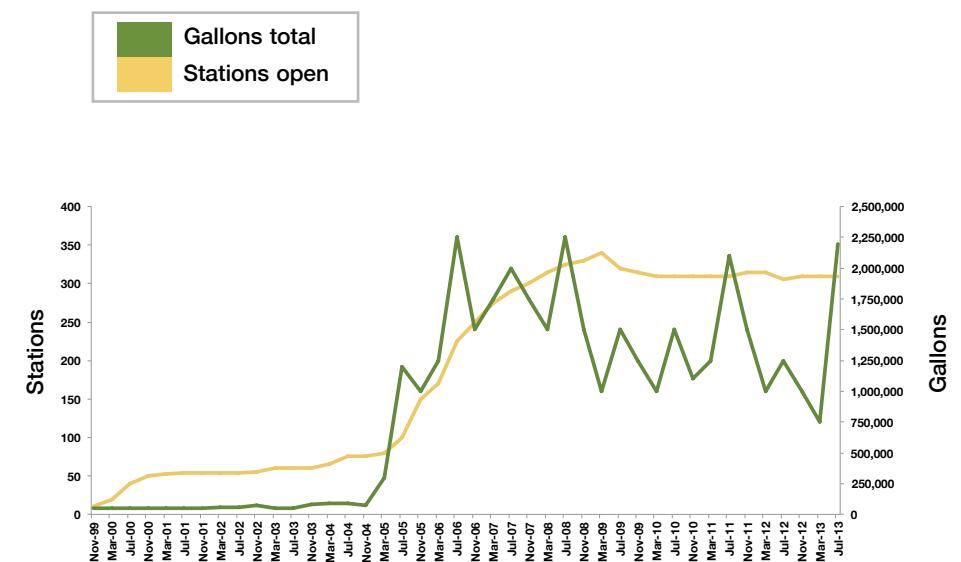
Average Minnesota Prices for E85 and gasoline



Source: E85Prices.com 11-1-2013

E85 consumption rises when the price spread between E85 and gasoline exceeds 20%.

Monthly E85 Stations and Sales



Source: Minnesota Department of Commerce

E85 use in Minnesota has varied sharply since 2006, while the number of E85 stations has remained flat.

Kay's Naturals is leader in offering

BUILD MUSC



"We are trying to make products that are socially conscious and assist in improving the health of the population."

*Massoud Kazemzadeh, PhD.
Founder, principal and CEO of Kay's Naturals*

BY JONATHAN EISENTHAL

With the slogan "Build Muscle Not Fat," Kay's Naturals mini-meal snack bags have won their way into medical weight loss programs and the aisles of major drug store chains like Walgreens. They have become a leader in offering innovative, problem-solving foods to the public.

Each mini-meal—including a selection of cereals, snacks and pretzels—contains as much protein as three eggs, is low in calories and fat and contains no gluten. Kay's Naturals also offers a complete daily diet plan that meets all daily nutrition needs while satisfying hunger and tastebuds, within a weight-losing 1,200-1,400 calorie regimen.

"We didn't start the business with making money as our first goal," says Massoud Kazemzadeh, PhD., founder, principal and CEO of Kay's Naturals. "In our religion, we believe that work that is done in the spirit of service to humanity is equal to prayer. We are trying to make products that are socially conscious and assist in improving the health of the population."

"We saw a need in the society for foods to help diabetic people control their weight and their blood sugar. Unfortunately, the demand for our products is from all over the world including India and the Middle East, where the high rates of obesity and diabetes are increasing faster than in the U.S."

In the early 2000s, AURI pitched in with Massoud and Ann Kazemzadeh's startup. Today, the Clara City, Minn., facility houses two enterprises—Kay's Naturals, which is owned by two dozen investors, and Kay's Processing, which is owned by the Kazemzadehs. Kay's Naturals turns out the products under their brand. Kay's Processing handles private label work, producing both Kay's Natural recipe products and products to the order of third parties, all of which are marketed under the third party's major national brands. Kay's Processing has annual sales in the seven-figure range.

"You could see that they were going places with this concept as well as their talent and drive; they were coming into the market with the right product at the right time," says Charan Wadhawan, AURI's senior scientist for food and nutrition. Wadhawan helped analyze nutrition levels of various products during development of formulations that the Kazemzadehs were considering when they began. She tested at least 30 products, and when Kay's Naturals made its final decisions on the formula for each, conducted final analyses to generate the food labels.

"Charan from AURI was a great help in the early days of our company," explains Massoud. "She calculated the nutrition profile of our products and assisted in bringing attention to our capabilities."

The Kazemzadehs made heavy investments of cash and sweat equity. Ann, an attorney, developed the business plan; Massoud, a processed food expert who holds 18 patents, designed and equipped the facility. The Kazemzadehs even sponsored housing for workers in order to help assure a stable pool of talent to operate the food processing facility. With 25 employees, they are a vital employer in west central Minnesota.



Kay's Naturals turns out health products under their brand, while Kay's Processing handles private label work.



Acclaims and Awards

- Dietitians at Johns Hopkins and the Mayo Clinic have recommended Kay's Naturals to patients who are diabetic and/or in weight management programs.
- Kay's Naturals pretzels were given *SELF Magazine's* 2012 Healthy Food Awards
- Other Kay's Naturals products have earned awards including:
 - Taste of Expo East
 - Drug Store News'* "Best New Diabetes Product"
 - Retail Grocery's "Trail Blazer Award"

problem-solving foods to the public

CLE NOT FAT

Attracting made-to-order business requires adherence to stringent guidelines and needs the backing of international standards organizations. The state-of-the-art facility operates under the certification of the Global Food Safety Initiative and the British Retail Consortium; it is one of the few companies in Minnesota with certifications for kosher, organic, and gluten free that can produce both baked and extruded products such as gluten-free cereals and pretzels.

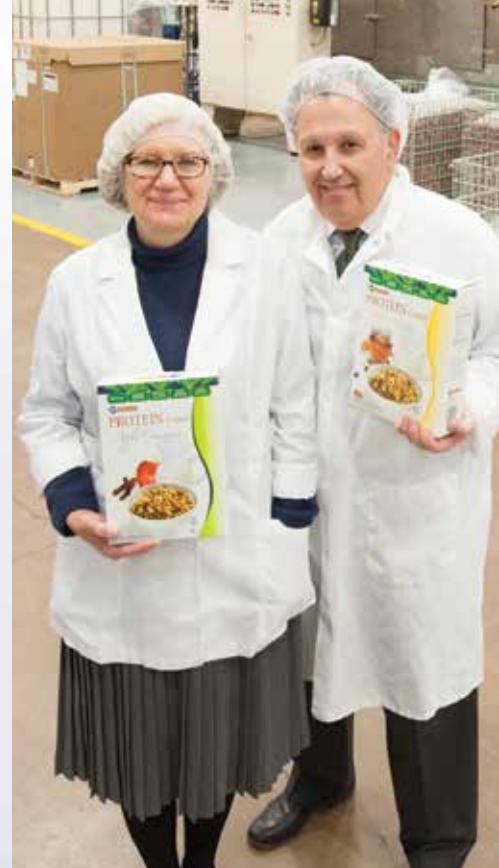


The Kazemzadehs sponsored housing for workers in order to help assure a stable pool of talent to operate the food processing facility. With 25 employees, they are a vital employer in southwestern Minnesota.

"Kay's Naturals have a real presence in the weight loss and sports nutrition areas, but we are still trying to grow these markets and make a mark in diabetic foods, which is the reason I came up with these foods in the first place," says Massoud, who was inspired to create Kay's Naturals when his first wife, diagnosed with diabetes as a juvenile, needed foods designed for her critical nutrition health needs. She did not survive to see the products become reality, but Massoud sees them, in part, as a tribute to her.

The Kazemzadehs are also interested in reaching impoverished people dealing with the health impacts of obesity. More than 100 million Americans are overweight, and 40 million struggle with morbid obesity, according to the NIH. Americans spend \$33 million on food products aimed at weight loss, but the NIH figures, coupled with the fact that Americans consume 6.5 billion pounds of snack products a year, indicate considerable potential and need in the healthy snack food market. The Kazemzadehs believe the health food segment still lags when it comes to producing healthy food that has the taste and aesthetic experience to satisfy people who've grown accustomed to salty, sugary, fat-filled snack foods.

One thing is certain: there is a need for these healthy snack foods. The Kazemzadehs have already seen significant success in this area, and are poised to take further advantage of a growing market—not only creating jobs in Minnesota, but creating a healthier world. ■



Ann and Massoud Kazemzadeh



**AURI and
Kay's Naturals**

Idea to reality:

Create healthy snack foods that meet the nutrition needs of diabetics, those trying to lose weight, and a general population that needs healthier snack foods.

AURI's role:

AURI scientist Charan Wadhawan helped the Kazemzadehs with product formulations when they were beginning their business. Wadhawan also provided nutritional analysis necessary for food labels for the products.

Outcome:

Today, Kay's Naturals and Kay's Processing do annual sales in the seven-figure range and employ 25 people in the Clara City, Minn., area.



for Kay's Naturals

- Kay's Naturals are used by the University of Miami Hurricanes and the Chicago White Sox for their diabetic and gluten-free athletes.
- Kay's Naturals have been accepted into vending machines for the Chicago Public Schools and accepted statewide into the Connecticut schools based on the nutritional value.



PHOTOS BY ROLF HAGBERG

Grand Rapids entrepreneur finds success with pepper sauce

"What I've found out from AURI in a week would have taken me a year on my own."

Steve Olds

BY JONATHAN EISENTHAL

When he joined forces with AURI, Grand Rapids, Minn., entrepreneur Steve Olds had 150 distributors and had sold about 26,000 bottles of Steve's Pepper Sauce. Since beginning work with AURI in 2010, he's grown his network to 250 retail outlets and now packs 600 bottles a week.

Olds first started creating his vegetable-based hot sauces in 2005. Five years of experimentation led to the current formula. The volume of feedstock has grown by leaps and bounds—from 200 pounds of peppers in the beginning to 1.5 tons now. He hand processes about 50 pounds of onions an hour when making a batch of the sauce.

Helping take a business national

Olds first came to AURI for help with product stabilization (ensuring it could last on grocery shelves and maintain its appearance for an extended period of time), and AURI will serve as a resource for him as he grows his business.

"When I came to AURI I wanted as much help as I could get," says Olds. "And now it's a relationship that I imagine will continue for as long as I'm in business. I want to take this line of products, this brand, to the national level."

"Whenever I have a question I just pick up the phone," says Olds, referring to AURI Senior Scientist of Food and Nutrition Charan Wadhawan, who helped Olds troubleshoot his product's shelf stability problems. "And when there is something AURI doesn't do themselves, they've got a very nice network of expert resources."

Accessing AURI's network of resources, AURI Project Manager Becky Philipp set Olds up with the Center for Rural Entrepreneurial Studies at University of Minnesota, Crookston. Students there arranged a taste test comparing Steve's Pepper Sauce to Tabasco® sauce. Of 20 participants, 18 preferred Steve's Pepper Sauce. The whole thing was captured on video and posted

to YouTube. Now, Steve's Pepper Sauce distributors use the video and the information about the taste test to help convince prospective consumers to start buying Steve's Pepper Sauce.

When Olds came to AURI, he was already a successful entrepreneur who had run a restaurant in Grand Rapids and had many of the basics of starting his business squared away, which meant he was ready to move on to even more complex issues. The latest is lining up the right laboratory to perform the Scoville Test: the standard scale for measuring the "heat" in hot peppers.

Steve's Pepper Sauce is an example of how AURI can help a business that is mid-stream in their development, explains Philipp, who manages AURI's work with Olds and ensures the objectives of his project are met by the organization. "His passionate commitment was already there. AURI helped him get to the next step," says Philipp.

Olds' product can now be found throughout the Midwest including North Dakota, South Dakota, Wisconsin, Iowa, Illinois and Missouri. His most devoted fans are still concentrated in the northern tier of Minnesota. Steve's Pepper Sauce can be found at restaurants, grocery stores, and liquor stores in Grand Rapids, Minn.; Hibbing, Minn.; Virginia, Minn.; Forbes, Minn.; and in meat markets across the Iron Range.

"I will help him scale up," says Wadhawan about her ongoing work with Olds. "As he expands, he will need a copacker—a contractor to manufacture his product according to his formula with his labeling and packaging. I can help him identify the right one."

Olds looks forward to a long and fruitful relationship with AURI. "There is no book on how to launch a sauce," says Olds. "What I've found out from AURI in a week would have taken me a year on my own." ■



Grand Rapids, Minn., entrepreneur Steve Olds is the force behind Steve's Pepper Sauce.



AURI and Steve's Pepper Sauce

Idea to reality:

Steve Olds had already launched Steve's Pepper Sauce in 2010 and sought out AURI's assistance in order to grow the business.

AURI's role:

AURI Scientist Charan Wadhawan helped Olds by providing nutritional analysis, ensuring his product was shelf stable, sourcing ingredients and equipment, and connecting him to needed resources. She will continue to connect him with AURI expertise and other resources as he expands his business.

Outcome:

Since beginning work with AURI in 2010, Olds has grown his network to 250 retail outlets and packs 600 bottles of sauce a week. His consumer audience now reaches Minnesota and several other Midwest states, and he is working on expanding further in the Twin Cities market and nationally.



2014 Top food trends to watch

BY CHARAN WADHAWAN, PH.D.,
SENIOR SCIENTIST OF FOOD AND NUTRITION

To help food manufacturers in their product development, various organizations, marketing consultants and food experts identify trends. Following are predictions for key food product trends that you may well see leading the way in 2014.

Natural reformulation

The Food and Drug Administration (FDA) hasn't developed a definition for "natural," and a proliferation of lawsuits alleging false advertising of products with "all-natural" claims has compelled many companies to reformulate. The demand for additive- and preservative-free products is growing. Ingredient suppliers have a challenge to combine this desire for all-natural food with a desire for functionality and taste. Nature's own functional foods are increasingly being utilized, such as parsnips, vegetable, artichokes, kale, and the rediscovery of Chia and Freekeh. We are going back to the future for health.

Sustainability and waste reduction

Manufacturers have been focusing on sustainability. McDonald's recently vowed to source only "verified sustainable beef" for its burgers by 2016. "Sustainable," like "natural," is another labeling term that lacks uniform definition. Manufacturers are shifting to reduce food waste wherever possible. Ingredients play an important role in reducing food waste, throughout the value chain as well as with the end consumer. New solutions will emerge to recover, recycle, reuse and reduce at all costs.

Socially responsible companies take the lead

According to a survey by ConAgra Foods, 62 percent of consumers "appreciate, and want to support, companies that donate to important social causes." Consumers will be drawn to those brands that deliver a consumer-friendly product, while also supporting initiatives that align with their beliefs and views.

Emerging proteins

Traditional dairy and soy sources remain strong but new non-allergenic vegetable and grain sources including rice, pea, chia and quinoa are playing a key role in weight management, satiety (the feeling of being sated) and muscle development. The popularity of plant-based eating has encouraged manufacturers to make products with plant-based proteins. Pea protein is a hot protein alternative to egg and dairy protein because of its link to greater satiety compared to whey and other proteins.

Look out for the small guy

Small innovators are developing unique and high-quality products with small-scale appeal but with big potential. Social media platforms provide more opportunities for small companies to expand their markets by targeting niches locally as well as globally.

Flavor trends

Flavor will play an important role in the development of new products as consumers demand high-quality, great-tasting flavors. International flavors are going to make appearances in our own kitchens. Seasonings and spices not only jazz up a dish, but they also offer health benefits. Bell Flavor and Fragrances highlighted sweet and savory fusion as key 2014 flavor trends including Huacatay (Peruvian black mint), Kimchi (a traditional fermented Korean side dish made of vegetables with a variety of seasonings), Ginger, Aronia Berry, and more.

Regaining trust

Food safety and scandals have scared consumers. To regain their confidence, companies will use ingredient origin and detailed labels as marketing tools.

Health and diet

Healthy lifestyles are here to stay. Nutrition is getting closer to being recognized as the best answer to healthcare challenges around the globe. Expect meat alternatives, sugar alternatives, natural energy drinks and healthy ingredients in many applications. There is also an increase in products developed with reduced sugar, salt and saturated fat, while maintaining a clean label with minimum alternative ingredients.

National Restaurant Association's annual What's Hot culinary trends forecast shows that health-driven dishes are heating up with kale salads and natural sweeteners such as agave and maple syrup rising to the top of the trend forecast.

Non-GMO

Despite the failure of state ballot initiatives in California and Washington, consumer demand for non-GMO products continues to increase. The non-GMO food and supplement category is the fastest growing sector in the entire natural products industry, with non-GMO product sales recently surpassing \$3.5 billion. For the dietary supplement industry, the issue poses specific and significant challenges.

Better-for-you snacks

As snacking has increased, so has individuals' overall diet quality. Healthy but convenient snacks are a growing category. Demand for healthful ingredients, protein and natural sweeteners along with great taste are on the rise.

Allergen-free

Allergen concerns will continue to increase, prompting innovative solutions. The gluten-free trends will continue to grow in 2014. Despite the lack of evidence, consumers associate gluten-free diet to weight loss. Ancient grains, alternative flours and pulses such as garbanzo beans, peas and lentils are being used in place of wheat. The future of gluten-free is better flavor, texture and convenience. Coconut, nut and grain milks are alternatives to soy and dairy. Cooking sauces like red miso, oyster, soy, peanut and fish sauces will be reformulated to offer allergen-free versions.

Supermarkets – The new culinary schools

Experts predict that supermarkets will become the new culinary mecca. Many stores already offer cooking demos or "community cooking centers" that allow shoppers to come together and learn from one another. The supermarket is a classroom for adults, and I encourage you to bring along the kids to teach them how to find foods that will help them grow and flourish.

AURI WELCOMES



Microbiologist joins AURI staff

Jimmy Gosse, Ph.D., joined AURI's staff as microbiologist in February. He will work primarily out of AURI's lab in Crookston, Minn., Gosse aims to improve and expand the ways in which microbes add value, treat waste and provide

new products for Minnesota entrepreneurs and established agribusinesses. He provides laboratory support and technical advice in the areas of microbial biochemistry, molecular biology and genetics for AURI partners.

Gosse's background includes academic research appointments, teaching and industrial research experience. While working at the University of Minnesota and in the Department of Biological and Agricultural Engineering at North Carolina

State University, he developed a network of scientists at educational institutions and federal research laboratories and has published peer-reviewed papers with many of them. Most recently Gosse was director of research and development for the Minnesota-based biotechnology start-up BioCee.

Gosse received his Ph.D from the University of Minnesota – Twin Cities in biochemistry, molecular biology and biophysics.



Helping agriculture succeed in rapidly changing environment

BY TERESA SPAETH
AURI EXECUTIVE DIRECTOR

Those who may stereotype rural life as slow-moving and resistant to change need only look at the changes in the agriculture economy in the last year to see that change is happening quickly. Rural and urban agribusinesses and producers are needing to adapt deftly to sustain and grow their businesses for the future. Think of these events or changes alone:

- Volatility in commodity prices
- Recommended changes to the Renewable Fuel Standards
- Final passage of a five-year farm bill
- Propane shortages resulting in record high prices
- Increases in livestock feed costs

Part of the reason AURI was initially created was to help increase value for commodities during times of extreme low prices. But even as prices have increased, the volatility in agriculture and the continuous need to adjust makes the work AURI is doing just as, if not more, relevant today. Here are some examples of how AURI is helping address these challenges:

Propane shortages:

Interest in using agricultural and woody biomass increases during times of high propane and natural gas shortages, but work happens year-round to better understand this renewable fuel, its advantages and challenges, and the market for it. AURI's Biomass Feasibility Guide (found on AURI's website) is just one way that AURI continues to provide information to greenhouse operators, poultry producers, and others who are considering biomass as a heating option.

Increases in livestock costs:

Feed costs are one of the highest inputs for producers, but using the best, most nutritious feed also has a tremendous impact on the prices farmers can get for their animals. AURI is continuously looking at new and alternative feed options, as evidenced by the work on a new alfalfa blend pellet featured on pages 2-3.

Volatility in commodity prices:

One of the important benefits of value-added agriculture—the term that generally refers to manufacturing processes that increase the value of primary agricultural commodities—is to offer enough long-term usage options to create a steady demand, and hopefully therefore steady prices, for commodities. Alternative uses offer more options for commodity uses.

One of our goals at AURI is to be an agile organization that constantly has our eye on the future. We do this in multiple ways, including having teams that watch trends in our core four areas of biobased products, coproducts, food, and renewable energy, and conducting assessments and studies of current and future needs. We constantly evaluate emerging and new opportunities to help create a strong future for agriculture and all of its related industries.

ELSEWHERE IN AG INNOVATIONS

BY ASHLEY HARGUTH

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.



Corn oil lowers cholesterol

Corn oil significantly reduces cholesterol with more favorable changes in cholesterol than extra virgin olive oil. Among the people in the feeding study, consumption of foods made with corn oil resulted in significantly lower levels of LDL (bad) cholesterol and total cholesterol than the same foods made with extra virgin olive oil.

Corn oil has a unique combination of healthy fatty acids and plant sterols, which research suggests help lower cholesterol. Plant sterols are plant-based substances naturally present in fruits, vegetables, nuts, seeds, cereals, legumes and vegetable oils, such as corn oil. To the extent that plant sterols play a part in reducing blood cholesterol levels, they could have an important role in a heart healthy diet.

science20.com, December 2013

Biodegradable packaging

The USDA Agricultural Research Service is working on a variety of composite materials that use coproducts such as cotton burs, seed hulls, cornstarch, flax, switchgrass and wheat straw. One product involves combining cotton gin waste and fungi inside a cast where the two ingredients become one, resulting in a foam-like material that can be used for packaging. The team is also looking at using this technology for recyclable, termite-resistant particleboards and pressboards, like outdoor deck planks.

USDA-ARS, December 2013

Biobased roofs

Buildings in New York are getting covered with soy-based products.

The historic Varick Street Federal building in New York City's Lower Manhattan has a new, white soy-based roof coating. The coating extends the roof's service life by more than 50 percent and exceeds New York City's CoolRoofs guideline by reflecting the sun's rays.

New York-area residents are also gaining useable living space on roof tops, play grounds and putting greens with durable soy-backed artificial grass from SynLawn. The company replaces more than 60 percent of the petroleum-based polyurethane with soybean oil. In addition to requiring no water, the artificial grass helps to lower temperatures, which reduces energy consumption in buildings.

Soybiobased.org



Cheese de-icer

The city of Milwaukee, Wis., is looking to expand its options for winter road care. One of those options is cheese brine, the salty excess that is drained off when making curds. The liquid cheese brine activates the rock salt that is currently used to work faster. The combination of the wet cheese brine and the dry salt means safer roads faster.

todaystmj4.com, September 2013



Ag-based binders for mulch

Highway crews often use a green coating near new roadways to protect newly sown seeds. This hydromulch typically contains water, mulch and a binder, commonly, guar gum. This gum is imported into the U.S., but costs are rising, so researchers at the USDA-ARS are looking at crop plant alternatives.

Some new binders include gums from camelina and a starch-based material from cornstarch. Six of the materials tested were stronger than the currently used guar gum.

USDA-ARS, January 2014

AURI'S CORE FOUR QUIZ

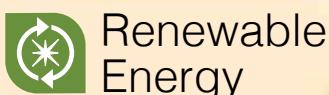
How much do you know about AURI's core four areas: food, renewable energy, coproducts, and biobased products? Take the below quiz.



What is lactose?

- a. A new type of cooking oil
- b. A type of cheese
- c. A sugar in dairy products

Answer: c



What is miscanthus?

- a. A type of pellet to burn
- b. A tall, perennial grass
- c. An additive for ethanol

Answer: b



Liquid ethanol coproducts may be used as?

- a. Animal feed
- b. Fertilizer
- c. Cooking oil

Answer: a



A northern Minnesota company is using what to help insulate windows?

- a. Dirt
- b. Soybeans
- c. Cornstalks

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

Service Areas: What We Provide

Applied Research and Development

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

Innovation Networks

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

Hands-on Scientific Assistance

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

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

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

Learn More

- Contact one of the AURI Offices to speak with a project development director about your business.
- Visit auri.org to see the latest research and learn about upcoming events.
- Sign up to receive the *Ag Innovations News* or the AURI electronic newsletter to stay informed about AURI projects and clients.
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Ag Innovation News is published quarterly by the Agricultural Utilization Research Institute to inform the food, agriculture and business communities and the general public about developments in innovative agriculture.

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

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USDA grant allows AURI to help more rural cooperatives

BY AMANDA WANKE

The USDA awarded AURI a Rural Cooperative Development Grant (RCDG) of \$200,000 for fiscal year 2014. The grant, which AURI will match with \$70,000, will help several rural cooperatives across Minnesota. Funds will be used to assist those co-ops in the creation and improvement of products and processes that use commodities and will result in economic growth and creation.

The story on pages 2-3 highlights a previous project that resulted from an RCDG grant. Thanks in part to those funds, AURI, the Minnesota Valley Alfalfa Producers (MnVAP) and the University of Minnesota were able to work together to develop a lower-cost, blended-fiber feed pellet to help address the high cost and low availability of alfalfa in recent years. Thanks to this work, MnVAP will manufacture 5,000 tons of the new feed pellets in 2014, and plans to triple production in 2015.

"AURI has worked with co-ops since our inception 25 years ago," explains Senior Project Strategist Michael Sparby. "The Rural Cooperative Development Grant is another tool in the toolbox to help those cooperatives as it allows us to leverage funds to have a greater impact."

"There are some really exciting projects coming about as a result of this grant, and we look forward to sharing more about those in the future," explains Sparby, who emphasizes that details of the work with the cooperatives is confidential at this point for competitive reasons. ■

Those with a need related to rural cooperative development should contact AURI at 800.279.5010.



PHOTO BY ROLF HAGBERG