

SOURCE

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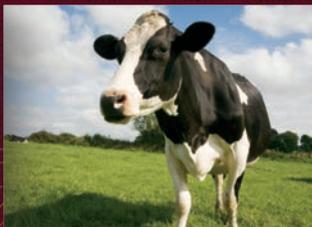
Creating a stronger Minnesota

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Farm businesses

Global initiatives

4-H youth
teaching youth



SOURCE

WINTER 2016

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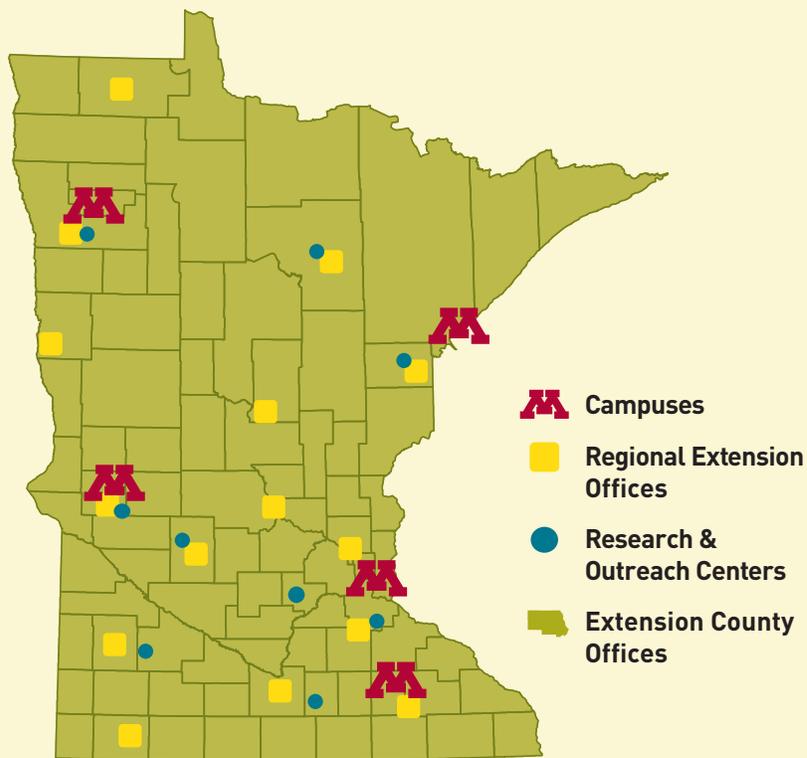
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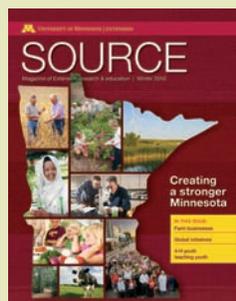
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Connecting the University with Minnesota



Over 65% of Extension's 800 researchers, educators and staff live and work in Greater Minnesota at: county offices, regional Extension offices, Research and Outreach Centers, and U of M campuses.



COVER: University of Minnesota Extension discovers science-based solutions, delivers practical education and engages Minnesotans to build a better future. Together, we create a better world through:

- Healthy food
- Thriving youth
- Vibrant communities
- Cleaner water
- Stronger families
- Efficient agriculture

From the Dean

From border to border — and beyond



Bev Durgan, Dean

Extension is the University of Minnesota in every county of Minnesota.

From Kittson to Houston, Rock to Cook, Traverse to Chisago, Roseau to Faribault — and all counties in between — Extension connects the wealth of knowledge and expertise that exists in communities and the University to address grand challenges.

Extension research and education responds to real community needs from across Minnesota. Our research is often conducted with and in the communities and places we engage—on working farms, in Minnesota forests and waterways, with children and schools, in cities and counties, and with all types of families. Our educational workshops, classes, online resources and materials are rooted in science and delivered in hands-on opportunities that enhance learning and foster positive behavior change.

This fall, the U launched a statewide Driven to Discover campaign. We are pleased that three Extension faculty and our Master Gardener program were included, shining a light on their great work and their drive to improve lives. Extension's Dr. Jeff Coulter, Dr. Matt Russell and Dr. Dan Larkin, as well as the Master Gardeners, are featured on billboards across Greater Minnesota and on the U's website. They joined faculty and students from the University's Crookston, Duluth, Morris, Rochester and Twin Cities campuses in the billboard campaign that runs November and December and again in the spring. You can see the campaign and read their stories at driven-to-discover.umn.edu.

This issue of *Source* not only highlights our work within Minnesota, but across state and international borders. I invite you to read on to learn more about Minnesota's global network and how Extension strengthens it, agricultural business management that is crucial to farming outcomes, 4-H teens who teach younger peers to make healthy choices, and exciting research highlights.

Sincerely,

Beverly R. Durgan
Dean, University of Minnesota Extension

U STUDENTS Part of the Extension team



Over 80% of university students indicate they want an experiential opportunity related to their field of study. University of Minnesota Extension offers many ways for students to contribute to research, earn valuable experience and make a difference.

"I wanted to work with Dr. Cox because of his Extension position," says Christina Fehrman, a masters student in meat science whose thesis work is guided by a grant-funded beef quality project led by Ryan Cox, Extension meat specialist. "Because of Extension, I got to assist with related educational workshops too."

Fehrman is one of many students involved in Extension research in environment, food and agriculture, communities, families, and youth development. Extension research responds to real community needs from across Minnesota, giving students real-life experience.

Extension supports undergraduate and graduate students with:

- Unique opportunities serving Greater Minnesota
- Mentorship on rigorous research projects
- Exposure to problem solving and teamwork
- Building relationships with community partners

You can help keep the intern program growing into the future with a donation to Extension. **To support career exploration opportunities for college students, visit z.umn.edu/ExtStudentOpps**



Extension helps farmers learn how to manage complex farming situations. Ed Usset, Extension economist (right), works with David Bau, an Extension agricultural business management educator, to create timely and relevant learning experiences for Minnesota farmers.

Calculated decisions

Management is crucial when so many factors control farming outcomes

Extension applies agricultural economics research to the real world and high stakes of farming.

To help farmers thrive in better times and survive in tough ones, Extension offers a host of online tools, programs and resources on:

- Investment decisions, such as large machinery and equipment
- Pricing for crops and livestock
- Land rental
- Land transfer and estate planning
- Agribusiness, crop insurance
- Navigating the 2014 farm bill

To learn more, visit
www.extension.umn.edu/agriculture/business

When Ed Usset, Extension grain marketing specialist, tells farmers to “find that dime,” he means a dime more per bushel of corn or soybeans that they can earn with a good marketing plan. Those dimes add up, and not only for the farmer. Farm profits circulate through farmers’ cities and towns. When farmers lose money, whole communities lose out on employment, sales and tax revenue that don’t materialize.

The most recent production season gives ample insight into why planning matters. Though 2015 welcomed ideal growing weather, volatile market forces brought crop prices to the lowest in recent years. Even the savviest farmers may not profit in such a tough year, but because of Extension education they and their communities won’t have as deep a hole to climb out of.

Informing decisions

One place farmers learn to “find that dime” is on a virtual farm in south-central Minnesota. It’s much like any other crop and livestock operation. Informed decision-

making is essential, especially because external forces, like weather and market fluctuations, can exert unwelcome influence on a farm’s bottom line.

A group of Redwood County farmers meets monthly to study commodity marketing on this virtual farm, designed to replicate real-life decisions they face when bringing crops to market. David Bau, Extension agricultural business management educator, with input from Usset, presents scenarios on applying lessons to their own enterprises.

When Debra Sue Lee attended her first Extension agricultural business management workshop in the mid-’90s, she’d had a bad crop year and was facing the failure of her farm. “I didn’t know terms like futures and options, but Extension helps everyone learn no matter what level they are at,” she says. “And I was getting the fast realization that I needed to understand it all.”

Lee now helps her husband, Randy, farm near Franklin in Renville County and has gone from not understanding the market to taking up a career in commodity marketing. She still participates in Extension’s

HELPING DRIVE MINNESOTA'S ECONOMY

Minnesota agriculture is a major contributor to the state's economy, contributing \$75 billion in economic activity and more than 340,000 jobs. Extension's research and education on improving agricultural business management and agricultural production help keep Minnesota strong.

Minnesota ranks in the top five states in total agricultural cash receipts in:

- Turkeys
- Hogs
- Sugar beets
- Spring wheat, oats
- Soybeans
- Canola and other oilseeds
- Grain corn
- Hay
- Sweet corn, dry beans, green peas

Minnesota also ranks high in dairy, chickens and eggs, and many other commodities.

*Minnesota Department of Agriculture; National Agricultural Statistics Service



agricultural business management education. "It's great for listening and bouncing ideas off of each other," she says. "Extension has opened doors for me to learn and grow."



Farmers and others who work in Minnesota agriculture rely on Extension for current, timely and accurate information.

Tim VanDerWal, a Redwood County corn and beef farmer and president of the Wanda State Bank, also encourages farm clients to participate. "As a farmer, I learn a lot from the knowledge base and experience Extension brings to the table, including seeing how 'surprises' can affect the outcomes in farming," he says. "When it comes to everything you have to do right in farming, we know it and we live and breathe it because it's critical to rural Minnesota communities. Extension helps identify those areas which have the greatest impact on profitability."

No margin for error

"All things equal, management is everything," says Extension economist Kevin Klair. "Management is the key that makes the difference on whether a farm thrives or struggles."

Of course, all things are never equal in farming, known for volatility from global markets, weather, diseases and input prices. This only makes proactive management all the more critical.

FINBIN, the nation's largest public farm financial database, is one Extension tool that makes analyzing and planning more informed and effective. It's used by farmers, crop insurers, consultants and bankers.

It's always been important for farmers to understand business. "Today, with larger operations and substantial investments, there's just no margin for error anymore," says Bob Craven, Extension economist and leader of the agricultural business management program. "You need to have a reliable decision framework. You need to understand how to work with your lender and your lender needs to understand the intricacies of agriculture."

Strengthening Minnesota's GLOBAL NETWORK

Extension engages with scientists, teachers and leaders from around the world



Extension opportunities bring together citizen-leaders to improve the world.

Left: Glen Haag explains his Minnesota farm operation to Laila Louddi and other Moroccan visitors. Right: Moroccan Rural Leadership program in Meknes, Morocco.

Minnesota is part of an increasingly connected global society, which benefits from exchanges in education, research and development.

For many countries, just like for Minnesota, development depends on strengthening their rural regions. While a country like Morocco differs in many ways from Minnesota, rural leadership works according to many of the same principles.

University of Minnesota Extension leads Cooperative Extension nationally on international development challenges and intercultural skill-building. The Moroccan Rural Leadership program is one of Extension's global initiatives, which are largely funded by federal grants. Farmer-to-Farmer funding from the U.S. Agency

for International Development supported Extension in rejuvenating a longstanding relationship with Morocco's National School of Agriculture in Meknes to develop organizational skills needed by new rural farm cooperatives and associations.

Mentoring leaders

Rich Miska, senior financial services executive with AgStar Financial Services in Waite Park, went to Morocco in 2010 on an international seminar trip with the Minnesota Agriculture & Rural Leadership (MARL) program. MARL, a partnership of University of Minnesota Extension and Southwest Minnesota State University, helps rural and agricultural leaders like Miska strengthen their networks and build leadership skills. It's a goal that, carried across borders, can improve lives globally and make the world more secure.

Selected as a mentor partly because of his financial skills, Miska shared experiences with a Moroccan honey producer. Extension leadership educators and two other MARL alumni paired with farmers who grow dates, olives and tree fruits. The Moroccan farmers, 10 men and 10 women, were selected for their leadership potential and ability to influence others.

"The biggest handicap our farmers face is the ability to grow when they lack financial aid, or when the funds stop coming," says Laila Louddi. She works in the Meknes Regional Agriculture Office that helps farmers become more successful. "Small farming cooperatives in Morocco lean heavily on aid from the U.S. and elsewhere. If they can learn how to manage better and become independent from this aid, this is success."

Louddi began to see such success as farmers carried out action plans and stayed in touch

International roots

Extension's global work began with supporting agricultural exports during and after World War I. In the '60s and '70s, a relationship started with Morocco. The "Minnesota Project" educated Moroccans, who then returned to Morocco to create a world-class research and teaching institute.

Many of those college students became leaders, such as Mohammed Sadiki, secretary general in Morocco's Ministry of Agriculture. "That project trained 400 'ambassadors' for Minnesota, who are now living in Morocco," he says. "To this day, they hold Minnesota—and the U.S.—in their hearts."

"Extension is frequently invited by other countries to share the model of connecting communities to University research," says Meredith McQuaid, the University's associate vice president and dean of international programs. "The model appeals to people because it engages people in their own learning with each other."



Nearly 400 Moroccans earned degrees through the 1970s-era Minnesota Project, and many maintain relationships with Minnesota researchers and businesses today. Pictured: This 1970s photo shows Ph.D. student Ahmed Zahour (right) and Zahour's adviser, Donald Rasmussen, a U of M world expert in barley.



Liu Minggou, a deputy director in China's Ministry of Agriculture (right) and his colleagues learn about Minnesota beef from Alfredo DiCostanzo, Extension animal scientist.

with their Minnesotan mentors. She noticed more awareness of agricultural technology, confidence among female agricultural leaders, stronger decision-making and better communication among cooperatives.

Miska says the learning went both ways. "Context is everything when it comes to learning, and in Morocco I've applied what I learned through MARL," he says. "I returned better equipped to affect change, embrace diversity and provide leadership across rural Minnesota."

Bringing the world to Minnesota

In August 2015, Extension welcomed Cochran Fellows from Morocco and Algeria. Part of the USDA's Foreign Agricultural Services, the Cochran Fellows program trains professionals from middle-income countries,

emerging markets and emerging democracies to develop agricultural systems and to strengthen trade.

"If we can help people from another country to do better, that's a good thing," says Glen Haag, a farmer in Winona County who showed the group how his conservation plan helps prevent erosion and runoff. "When you have research behind you, you can usually get someone to try at least one new thing," he told them.

Recently, a group from China came to learn from Extension meat scientists and livestock experts, as well as from beef producers. Liu Minggou, a deputy director in China's Ministry of Agriculture, says, "We learned how well scientists and government can work together in support of industry."

"People in the food and agriculture industry understand how our strengths can help us lead in the world, and they want to make these connections," says John Vreyens, Extension's director of global initiatives. "This is how Extension helps solve the grand challenges of a diverse and changing world."

For more information about Extension's global initiatives, visit <http://www.extension.umn.edu/about/global>



Julia Deshler, a 4-H member and high school junior from Cottage Grove, teaches fourth-graders about negative peer pressure, internet safety and the dangers of alcohol and tobacco use.

Photos: Craig Lassig for Pioneer Press



YOUTH TEACHING YOUTH

4-H teens teach and mentor their younger peers

4-H brings together kids of different ages, letting children learn from teens they look up to, and teens grow through mentoring others.

Park High School senior Alex Pendar knew she wanted to be a teacher. When she heard about a way she could see what teaching was really like, she and her friend Julia Deshler signed up for 4-H Youth Teaching Youth. In Extension 4-H, having older youth mentor the younger ones is an integral part of the program.

The 4-H Youth Teaching Youth program takes this practice up a notch by training high-school age 4-H'ers to teach elementary and middle school youth in Anoka, Dakota, Scott and Washington county classrooms. 4-H teen teachers learn a curriculum that helps younger kids learn to make better choices and provides hands-on leadership experiences for teens that can lead to future study and careers.

"When I was in elementary school, adults would just tell us 'stay away from this or that, because it's bad,'" said Julia. "In 4-H Youth Teaching Youth, we interact with the kids, and they relate to us because of our age. We ask them what they think, and create lessons and activities that make sense to them."

"Lots of mentoring happens among 4-H'ers, from age 5 to one year past high school," says Amber Shanahan, an Extension educator who provides leadership for the program. "But Youth Teaching Youth is a formal leadership experience in which the 4-H teen teachers take charge. They have to learn the curriculum, learn how to teach, practice and show up. They face high expectations with a lot of responsibility."

"When I started, I let my teaching partner take the lead," says Alex. "Now I've grown as a co-leader and can command the classroom instead of just being on the side."

The 4-H Youth Teaching Youth program fills an important need in school districts, earning

support from teachers, administrators and county partners.

"Our school districts told us they really needed programs that could help support young kids in learning how to be safe and make good decisions," said Fran Miron, Washington County Commissioner. "4-H's Youth Teaching Youth program has been an invaluable resource in helping us make sure kids in our communities are healthy and supported in these important and sometimes challenging areas."

Research shows that having youth teach other youth builds feelings of social usefulness and a sense of control. It helps prevent problems like substance abuse, pregnancy and delinquency. "Younger kids are inspired by older kids showing them how to be responsible citizens and good role models," says Shanahan. "Our teen teachers are excited and proud that they are making a difference."

For more information, visit www.extension.umn.edu/youth/mn4-H/youth-teaching-youth



4-H youth teachers encourage peers to make healthy choices

Reaching nearly 10,000 students annually with these topics:

- Building good character
- Talking about feelings
- Resolving conflicts
- Making decisions about alcohol and tobacco
- Staying safe online and dealing with cyberbullying
- Dealing with stress, peer pressure, hurt and prejudice
- Building relationships and appreciating diversity and differences

The results?

- 94% of participants surveyed said the teaching experience helped them make healthy living choices
- Classroom teachers unanimously agreed that they observed positive social and emotional learning, such as relationship-building, increased empathy and increased self-awareness through discussions and journaling.

4-H AMBASSADORS TEACH AND LEAD

Minnesota 4-H State Ambassador Julianna Langlois was a little scared about teaching younger 4-H'ers, but her initial fear was short-lived.

"The experience opened up a window of, 'Oh, I can do this,'" says Julianna, now in her second year as an ambassador. "It boosted my confidence to try new things."

Minnesota 4-H State Ambassadors serve as spokespeople for 4-H to educate youth and adults about the importance of youth development, leadership, citizenship, service, teamwork and other invaluable life skills. One responsibility is to teach nearly 800 youth at 4-H youth leadership conferences, like Building Leadership and Understanding (BLU) and Youth Exploring Leadership and Learning Out Loud! (YELLO!).

Using a youth-teaching-youth model, the ambassadors are trained to teach younger peers. They develop and lead activities that help youth think creatively, collaborate, and learn skills they'll take home and use in their lives and communities.

"Research shows that peer-to-peer teaching has benefits for both the teacher and the recipient," says Jacquie Lonning, 4-H Citizenship & Leadership program director. "Teachers learn how they can have an impact in their community and gain self-confidence. Youth respond well to other youth when they see them as a positive role model."



4-H State Ambassadors are role models in their communities and for younger 4-H members. As a team, they develop and teach leadership and other life skills to youth from across the state. Pictured: A group of the 2015 4-H State Ambassadors, including Julianna Langlois, second from left.

EXTENSION RESEARCH HIGHLIGHTS



Responding to avian influenza

Losses in poultry production and related businesses due to avian influenza are estimated at nearly \$650 million in Greater Minnesota, according to an Extension analysis. Carol Cardona and Sally Noll, Extension poultry specialists, are conducting research on biosecurity approaches and diagnostics to help poultry producers prevent such losses in the future.

One biosecurity upgrade recently in use across many turkey facilities in Minnesota is the “Danish entry system.” The system clearly assigns clean areas to the entry area of a barn and demarcates areas for clothing and footwear changes. Upgrades to the system—including additional walls and washing facilities—may further reduce risks. Noll and Cardona are working with Extension engineers on improvements to the Danish entry system, while comparing efficacy and costs. In 2012, Cardona developed a diagnostic test for detecting influenza in water samples that she rolled out to producers, helping them to catch the disease early and prevent spread.

Visit <http://z.umn.edu/extavian> for more information.

Funding support from Rapid Agricultural Response funds, Legislative Commission on Minnesota Resources, Minnesota Department of Agriculture.



Perfecting grape nutrition for better wine

Cold-hardy wine grapes released by the University of Minnesota are important to the wine industry in the coldest regions of North America. However, best practices for soil and nutrient management of the new cultivars weren't yet known. Without research-based information, growers could not achieve ideal crop yields and wine quality.

Carl Rosen, Extension soil scientist, Jim Crants, research scientist, and scientists from other northern universities conducted a three-year survey to establish soil and plant tissue nutrient diagnostic criteria for Frontenac, La Crescent and Marquette cultivars. They measured yield, grape size and four variables considered most important to the development of a quality wine. Although the results are preliminary, they discovered that vine nutrition can influence grape juice quality. They established nutrient sufficiency ranges that will optimize yield and quality for these Minnesota grapes.

Nutrient guidelines will be available for growers by spring 2016. Final results will be shared in late 2016 at northerngrapesproject.org.

Funding support from the U.S. Department of Agriculture Specialty Crops Research Initiative.



Reducing resistant weeds

Weeds are a chronic crop pest, resulting in \$33 billion in lost production plus another \$5 billion in herbicide costs in the U.S. The most widely used herbicide in Minnesota, glyphosate, no longer works as effectively on problematic weeds such as giant ragweed. In 2014, 1.5 million acres of corn and soybean in Minnesota were considered “heavily infested” with herbicide-resistant giant ragweed.

Jeff Gunsolus, Extension weed scientist, found that weed emergence was reduced when wheat or alfalfa were planted in rotation with the corn or soybean crop. When combined with other practices to prevent new weed seeds from entering the soil, long-term giant ragweed management can be accomplished. Extension educators contributed to the project, which was co-led by graduate student Jared Goplen. Visit z.umn.edu/HerbicideResistance for more information.

Contributions from Dept. of Agronomy faculty. Funding support from Rapid Agricultural Response funds and the Monsanto and Torske Klubben Graduate Fellowship funds.



Help for Minnesota logging businesses

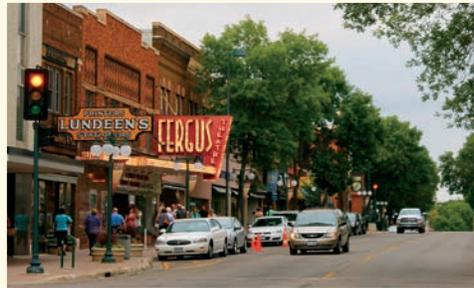
Forest products manufacturing and related sectors contribute \$9.7 billion in direct value and \$3 billion in indirect value to Minnesota's economy.

Logging businesses provide wood to mills for use in a variety of forest products, according to Charles Blinn and Matthew Russell, Extension forest resources specialists. But the closure of several mills within the state had industries concerned about the status of Minnesota timber. Blinn and Russell, along with industry partners, recently published the findings of a survey and outcomes from focus group sessions.

They authored "Minnesota's Logging Business: An Assessment of the Health and Viability of the Sector" (Forest Science, April 2015), noting that there are now fewer Minnesota loggers, with the trend of larger logging businesses harvesting most of the state's wood. They identified several ways that Minnesota logging businesses may need to modify their operations to stay competitive.

The full report is available at z.umn.edu/MnLoggingSector.

Collaborators include Tim J. O'Hara, Minnesota Forest Industries; Dave T. Chura, Minnesota Logger Education Program; Minnesota Agricultural Experiment Station, U of M Department of Forestry Resources, and AgStar Financial Services.



Getting to know Greater Minnesota

What are the strengths and challenges of the regional economies of Greater Minnesota? Extension analyst Brigid Tuck examined Greater Minnesota's economy using the geographic parameters of Regional Development Commissions. The resulting 12 reports examine Greater Minnesota's economy by describing its industry outputs, employment and wages, and how it is seizing opportunities to sell product to local industries through local products.

Regional leaders and groups can use the research findings to discover their advantages and barriers, decide where to invest time and money, and engage their communities in growing local economies. **Visit z.umn.edu/mneconomiccomposition for reports, webinars and an overview of economic strengths in each region.**

Additional support from the University Economic Development Administration Center at the University of Minnesota Crookston.



Money smarts for teens and young adults

Joyce Serido, Extension family finance specialist, is awed by how highly Minnesotans value education. The downside is the extent of post-college debt. The financial strain of transitioning to adulthood during a time of continuing job losses and decreasing employer-provided benefits, compounded by college debt, can cause stress that leads to physical and mental health problems, or "the elephant sitting on your chest," as Serido calls it. But responsible financial behaviors can buffer that stress.

Serido and colleagues used a stress and coping framework to research ways to help young people minimize costs and create budgets before finances get out of hand. Now these findings are helping students and families make better decisions about financing their education.

The pilot program started in January with educational workshops taking place from Mankato to Grand Rapids on topics such as understanding the obligations that come with different types of college financial aid before signing on the dotted line. **Visit <http://z.umn.edu/PersonalFinance> for financial education resources.**



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