Thank you for your part in making Montana State University Extension relevant and successful in providing educational programs for the citizens of Teton County. This annual report highlights a few of the MSU Extension success stories in Teton County.

We want to extend a special thank you to the Teton County Commissioners and voters in Teton County for their continued support of MSU Extension. We also want to thank the many volunteers, the participants, the readers and listeners who help us deliver our important educational messages.

When you support MSU Extension, Teton County benefits, as well as the state of Montana.
**Healthy Tracks: Diabetes and Cardiac Disease Prevention**

<table>
<thead>
<tr>
<th>Program description</th>
<th>MSU Extension has partnered with Benefis Teton Medical Center, the Teton County Health Department and the Montana Department of Public Health and Human Services to provide education and behavior modification to participants who have one or more risk factor for diabetes and/or cardiac disease.</th>
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<tbody>
<tr>
<td>Number of Teton County learners</td>
<td>Over the course of four years, 139 people enrolled in the 10-month program.</td>
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<tr>
<td>Total hours of participation</td>
<td>Between classes, exercise and study, each participant spends about six hours a week dedicated to wellness improvements. MSU Extension Agent Jane Wolery provides a variety of lessons each year, averaging about 20 hours of preparation and instruction time per year.</td>
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</table>
| What did they learn? | • 40% of participants had a 5% reduction in weight through the program that they maintained through post-core curriculum intervention.  
• 25% to 30% of participants had a 7% reduction in weight maintained post-core.  
• 60% met goals of exercising 150 minutes per week.  
• Participants also had a reduction in fasting blood glucose levels, several cholesterol markers, and diastolic blood pressure.  
• Overall, students learned about nutrition, label reading, balancing dietary needs and caloric intake, adding aerobic, strength and stretching exercises and behavior modification. |
| How does this work make Teton County and Montana better? | According to the Center for Disease Control: Chronic diseases and conditions — such as heart disease, stroke, cancer, diabetes, obesity, and arthritis — are among the most common, costly, and preventable of all health problems. As of 2012, about half of all adults — 117 million people — had one or more chronic health conditions. Seven of the top 10 causes of death in 2010 were chronic diseases. Two of these chronic diseases — heart disease and cancer — together accounted for nearly 48% of all deaths.  
Obesity is a serious health concern. During 2009-2010, more than one-third of adults, or about 78 million people, were obese. Nearly one of five youths aged 2-19 years was obese. The majority (86%) of all healthcare spending in 2010 was for people with one or more of these chronic medical conditions.  
The total costs of heart disease and stroke in 2010 were estimated to be $315.4 billion. Of this amount, $193.4 billion was for direct medical costs, not including costs of nursing home care.  
The total estimated cost of diagnosed diabetes in 2012 was $245 billion, including $176 billion in direct medical costs and $69 billion in decreased productivity. Decreased productivity includes costs associated with people being absent from work, being less productive while at work, or not being able to work at all because of diabetes.  
Medical costs linked to obesity were estimated to be $147 billion in 2008. Annual medical costs for people who are obese were $1,429 higher than those for people of normal weight in 2006.  
These health risk behaviors — lack of exercise or physical activity, poor nutrition — are among the leading risk factors that are controllable.  
In 2011, more than half (52%) of adults aged 18 years or older did not meet recommendations for aerobic exercise or physical activity. In addition, 76% did not meet recommendations for muscle-strengthening physical activity.  
About half of U.S. adults (47%) have at least one of the following major risk factors for heart disease or stroke: uncontrolled high blood pressure, uncontrolled high LDL cholesterol, or are current smokers. Ninety percent of Americans consume too much sodium, increasing their risk of high blood pressure.  
Clearly, changes are needed. The wellness programs provided by MSU Extension are part of the solution for individual and societal challenges. |
# Pesticide Safety Education Program

<table>
<thead>
<tr>
<th>Program description</th>
<th>The Montana State University Pesticide Safety Education Program coordinates the certification needs of private applicators wishing to apply restricted-use pesticides across the state. This is a combined effort between the Montana Department of Agriculture and MSU Extension personnel. To become certified as a private applicator for the first time, you must either attend an approved six-hour initial training program or pass the open book Initial Private Pesticide Applicator exam.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Teton County applicators</td>
<td>Seventy-three people attended a four-hour morning learning session, and 51 attended a four-hour afternoon session.</td>
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<tr>
<td>Total hours of participation</td>
<td>Eight hours of combined classroom learning covering eight separate topics.</td>
</tr>
<tr>
<td>What did they learn?</td>
<td>Participants gained new insights into herbicide resistant weeds and methods of controlling them and reducing their propagation. New crop diseases and new control measures were also discussed along with training on identifying problem grass species. Applicators gained new information on important insect pests and control options and proper alfalfa hay production management techniques were reinforced. Farmers, ranchers and commercial operators also learned about possible changes to the licensing program and were trained on sprayer calibration, field re-entry intervals for restricted pesticides, and safety protocol when handling dangerous chemicals.</td>
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<tr>
<td>What action did they take?</td>
<td>Sixty-one applicators received enough educational credits to qualify for recertification and another 12 people received additional training in pesticide safety.</td>
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<tr>
<td>How does this work make Teton County and Montana better?</td>
<td>Proper pesticide use, storage and handling ensure a clean and healthy environment for Teton County and reduce risks to anyone exposed to pesticides in the process, as well as protecting handlers, workers, neighbors, and recreationists from exposure to hazardous chemicals.</td>
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MSU Forage Specialist Dr. Emily Glunk updates producers on new alfalfa management techniques.

Teton County 4-H Fair interview judging.

Teton County 4-H science camp.

MSU photos
## Strong Hearts

### Program description
Strong Hearts for Montana aims to reduce cardiovascular disease morbidity and mortality, improve quality of life, and reduce the cardiovascular disease-related healthcare burden in under-served rural communities through implementation of an innovative community-informed intervention.

The objective of the Strong Hearts research study is to address specific rural challenges in knowledge and practice in medically underserved rural towns. The research will test and compare curriculum designed to: a) improve diet and physical activity behaviors, b) promote locally built environment resources, and c) shift social norms about active living and healthy eating through civic engagement, capacity building, and community-based programming.

The research will compare changes in cardiovascular disease-related anthropometric, physiologic, behavioral, and psychosocial parameters between subjects in six intervention and six control communities, and it will evaluate changes in behavior, attitudes, and knowledge among intervention subjects’ “social network”.

### Number of Teton County learners
In 2015, 44 potential participants were screened for inclusion in the research study. Twelve participants met all qualifications to become research participants. Each of these participants completed a screening visit in which blood pressure, bone density, weight, height, body mass index, blood work and physical fitness test were completed.

### Investment of time
The National Institute of Health funded the grant for this rural women’s cardiovascular health project. A program coordinator, Glenn Deuchler, was hired in the spring of 2015 to assist in recruitment of participants and program delivery. Jane Wolery, MSU Extension Teton County agent, has been with the project since 2014. Over the course of the research project, an estimated 400 hours have been devoted. Wolery served on the curriculum committee by providing teaching and editing suggestions. Study design and participant recruitment have taken a dedicated effort. The test groups were randomized Oct. 1, and Teton County was selected as a control group. Participants will be provided with six educational sessions related to cardiovascular disease, health and wellness topics. Participants will continue with a variety of biometric screenings, surveys, dietary recalls and other data collection as part of the study until October 2017.

### What did they learn?
In the United States, one in four women dies from heart disease. Heart disease is the number one killer of women and, in fact, more women die from heart disease than the next three disease-related causes of death.

Participants are learning what contributes to heart disease, how diet and exercise relates to heart disease and how to make behavioral changes to reduce their chances of dying from heart disease.

### What action did they take?
Entire study results will be available in 2017, following the conclusion of the research program.

Because of our sparse medical facilities and distance to a variety of healthcare options, Montana is considered a frontier when it comes to healthcare. According to the Rural Assistance Center website: “The isolation and distances that classify an area as frontier result in long trips to attend school, shop for groceries, get healthcare, and reach other basic services. Public transportation options are often limited or unavailable in frontier areas, making access to needed healthcare services difficult for low-income households, the elderly, and people with disabilities.

“Frontier areas face the same difficulties as other rural areas in maintaining their healthcare workforce. These thinly populated regions cannot easily compete with the wages and amenities offered to physicians and nurses by hospitals and clinics in metropolitan areas. Even communities that do have adequate staffing are often one doctor or nurse away from a shortage. Rural communities are at higher risk for substance abuse, suicide, motor vehicle fatalities, obesity, cigarette smoking, and death from unintentional injuries.”

This Strong Hearts research program may uncover tested ways to intervene in frontier and rural states to provide proven, effective models to reduce risk of the top cause of death in women. If study curriculum design is found successful, the program may be replicated in rural communities across the United States. Not only does this research affect current and future participants in Teton County and in Montana, but it also has tremendous potential reach across the nation through the Extension system.
### Program description

4-H offers multiple learning opportunities in the STEM (Science, Technology, Engineering and Math) fields. In addition to the project classes, Teton County had two teams participate in 4-H BioScience program again this year. 4-H BioScience includes a week-long science experience on the MSU Bozeman campus, followed by eight months of supported science activities for youth. 4-H Camp Counselors choose a science theme for our three-day camp with each of the workshops having a STEM component. We also offer school enrichment programs focusing on science.

### Number of Teton County learners

Between school enrichment and traditional 4-H members, MSU Teton County Extension reached 339 youth learners with science lessons. In the last two years, we have had 16 youth and six adults participate in the immersive BioScience curriculum. Half of the members and leaders were new to the 4-H program and joined specifically to participate in BioScience.

### Total hours of participation

In 2015, there were 165 hours of instruction in 4-H science activities.

### What did they learn?

Students learned the relationship of science to our everyday lives. Camp Counselors studied science concepts while researching projects to teach at camp. BioScience students studied metabolomics, neuroscience and infectious diseases. Younger students learned about career options in science and predictive skills. Students learned observation, communication, cooperation, and evaluation during their science activities.

With the on-campus portions of BioScience, students gained confidence about their educational future. Being on a campus is a predictor of youth going on to higher education. (Hoover, 2006)

### What action did they take?

Many of our 4-H alumni are currently in careers directly related to their 4-H experiences. We hope, through our increased efforts in the STEM areas, to encourage more 4-H members to pursue science-related fields.

Through the 4-H science curriculum, students designed experiments, developed and tested hypothesis and communicated results.

### How does this work make Teton County and Montana better?

Our state and nation are in need of workers who are highly proficient in science, technology, engineering and math (STEM). Research has shown that 4-H members develop an increased interest in science three times higher than non-4-H’ers. Lessons in science through 4-H projects — robotics, bioscience, livestock evaluation, foods and nutrition — are doorways to science-related careers. 4-H intends to bridge the gap and build the problem solvers of the future.
**4-H and Youth Development**

**Program description**

4-H in Teton County is a vibrant educational program with multiple opportunities to build life skills. The many facets of 4-H include: School enrichment programs, interstate exchange, leadership retreat, livestock quality assurance and evaluation workshops, ambassador program, demonstrations and public speaking, officer training, volunteer leader training, camp, Congress, Rec Lab, BioScience, fair, committees and council, scholarship program, shooting sports, community clubs, and project clubs.

The program tallies 156 youth members (a 20% increase from 2013), 79 leaders, 230 additional youth contacts, 12 participants in interstate exchange, 10 participants in youth leadership retreat, six participants in Montana 4-H Congress, 68 participants in 4-H overnight camping, one participant in National 4-H Congress, two participants in the state Make It With Wool contest, three participants in national shooting sports competitions, 11 participants in 4-H BioScience, 33 participants in 4-H Council, a $103,831 investment in youth agricultural pursuits, and more than 2,800 hours of volunteer leadership in the 4-H program.

**Number of Teton County learners**

Between school enrichment and traditional 4-H members, MSU Teton County Extension reached 405 youth and adults.

**Total hours of participation**

Based on an estimated individual 4-H member’s participation, we estimate more than 8,000 hours of youth participation.

**What did they learn?**

4-H youth learn a variety of skills through their participation. 4-H alumni, current members and volunteers reported about the importance of the 4-H program:

- **Hannah Konen**, 15, in her eighth year as a member: “My favorite 4-H activity is camp because I’ve made so many friends there, have learned important skills like responsibility and teamwork, and have had fun by teaching and leading.”

- **Colton Stephens**, 24, a 10-year member, said, “4-H has made me more prepared for real life than anything I learned in school. 4-H has taught me about good record keeping, management skills, patience, public speaking, budgeting, and goal setting — all skills that I was not taught in school.”

- **Jayelyn Ruckman**, 19, 11-year member: “My most favorite and beneficial thing I was involved in through 4-H was livestock judging. I started when I was 8 years old and competed all over the nation at national competitions and had much success. Because of this, I have had the opportunity to attend college and be on the Casper College livestock judging team.”

- **Rocky Forseth**, 26, 10-year member: Took beef, lamb, sheep and teen leadership projects and said 4-H Congress was his favorite activity. “I currently work in the beef industry for a seedstock operation (developing bulls and marketing cattle to help producers improve genetics in their herd).”

- **Susan Snyder**, in 4-H for 18 years and has been a leader for seven years: “I volunteer as a leader because I gained great personal skills from 4-H and want to give back and provide for children what I had. 4-H provides multiple ways for children to learn by doing and in that atmosphere multiple opportunities to win.”

**What action did they take?**

4-H members in Teton County organize food drives, gather clothing for the needy, raise livestock, give 4-H speeches and demonstrations, evaluate projects, interview with judges, keep records, connect with caring adults, communicate and develop teams, lead projects, develop specific project skills, and complete amazing work.

And, they take the skills they learned as youth in the 4-H program and apply them as adults. Our 4-H alum sit on boards, serve in government, run agriculture and small businesses. They work in the medical field, in public relations and journalism, and become teachers. 4-H youth not only are the future, they touch the future. Through 4-H, we provide the skills for better personal lives and also enrich the fabric of society by developing competent leaders.

[MSU photo]

Teton County 4-H food drive.
Powerful Tools for Caregivers

**Program description**

Powerful Tools for Caregivers is an evidence-based education program offering a unique combination of elements to support those giving care to others.

**Number of learners**

In Teton County, 10 people participated in the six-week educational series. Additionally, church groups have requested portions of the program to be delivered, adding another seven learners. MSU Extension Agent Jane Wolery also presented information from the Powerful Tools for Caregivers program for a regional event reaching another 70 participants.

**Total hours of participation**

40 hours of participation by 85 learners.

**What did they learn?**

Self-care behaviors such as increased exercise, relaxation and health exams; management of emotions such as reduced guilt, anger and depression; self-efficacy with increased confidence coping with care-giving demands; use of community resources and respite-care options.

**What action did they take?**

Participants showed a marked improvement in being able to take time for themselves without feeling guilty and in finding ways to take care of their own health.

Participants also reported better abilities to understand the emotions of care-giving, finding positive ways to cope with the stress of care-giving, feeling confident in asking for help when they need it, doing something to make themselves feel better when they are discouraged, and finding resources that will assist them or their care receiver.

**How does this work make Teton County and Montana better?**

4-H youth are more likely to go to college, vote as adults, and contribute to their communities. (Lerner, 2009; Zaff et al, 2003). 4-H youth report three times more opportunities to engage in meaningful community leadership roles.

By investing in youth, we are investing in a future that affects all of us.

According to Caregiving.org, an estimated 43.5 million adults in the United States have provided unpaid care to an adult or a child in the prior 12 months. On average, caregivers spend 24.4 hours a week providing care to their loved one. Nearly one-quarter provide 41 or more hours of care a week. Care-giving is particularly time-intensive for those caring for a spouse/partner (44.6 hours a week). Caregiver services were valued at $450 billion per year in 2009. The value of unpaid family caregivers will likely continue to be the largest source of long-term care services in the U.S., and the aging population 65+ will more than double between the years 2000 and 2030. Many research studies show a significant decline in the health of the caregiver. In Teton County, 22% of our population is over the age of 65. Care-giving and receiving is very common in this population. If the caregiver’s health declines, the burden of care is often transferred to others. Beyond the social and emotional benefit of supporting caregivers, there is a cost associated with not supporting caregivers.
I accepted the MSU Extension Agriculture Agent position in Teton County on Oct. 1, 2015, and look forward to serving your needs for many years to come. My family has farmed and ranched the same ground since the late 1880s, raising cattle, sheep, goats and pigs, and farming winter wheat, sorghum, and hay. My brothers and I actively showed pigs, steers, and lambs all across the state through the 4-H and FFA programs in Texas. I was an Exchange Club member and also fortunate enough to compete on the state level in Method Demonstration and on the national level in Livestock and Meats Judging. A 4-H scholarship enabled me to attend college at Texas A&M where I continued with my judging career, earned a Bachelor’s degree in Animal Science and ultimately received a Master’s degree from MSU in Ruminant Nutrition.

The Texas Agricultural Extension Service offered me a position as an assistant county agent in a large program in Washington County, Texas, which I held for two years until returning to Montana to work for Sieben Livestock south of Cascade for four years.

I returned to MSU in the fall of 2002 and began 12 years of work for the Department of Animal and Range Sciences as a research associate. As my work was scattered from one end of the state to the other and I was always on the road, MSU allowed me to set up a working base from home, so I purchased and moved to a small farm east of Fairfield in 2006.

Teton County represents an extremely diverse agricultural production system spread across almost 1.5 million acres. Land ownership division is roughly 70% private and 30% state and federal; the county contains a relatively high percentage of private land compared to some other Montana counties. The majority of land use in Teton County is agriculture land or rangeland, with the remaining portion being forest and other. The variety of private, federal and state ownership and a mixed land use of irrigated and dry land crops and ranching provides diverse economic opportunities for local producers, businesses, and recreationists.

The county agricultural commodity sales in 2012 were a combined total of $140 million with $82 million in crops and nursery and $58 million in livestock sales. Most people in the county are aware Teton County tops the state in barley production. Teton County is ideally suited to malt barley production due to the timing of spring rains, cooler temperatures, and the usual lack of late summer rains during ripening and harvest. The county also ranks fourth in the state in winter wheat production and is in the top 15 for spring wheat, alfalfa, and other hay production. Teton County raises a large quantity of livestock with tremendous crop and hay production. Many residents may be surprised to learn that we rank first in broiler (chicken) production, seventh in milk cows, 13th in sheep, and 16th in beef cattle. These different agricultural enterprises could be missed as one drives through the county, but in truth provide much of the economic stability and recreational possibilities (open space and wildlife habitat) that make Teton County such a special place.

Another interesting fact about the agricultural production in Teton County is that 70% of the agricultural operations in the county are under 1,000 acres. From a Western U.S. standpoint, that is a very small average operational size, which means we still have a large percentage of family farms mixed in with larger family operations and Hutterite colonies. Surprisingly the county lost 175,000 acres of agricultural land between 2007 and 2012. We hope this trend will not continue and deserves a closer look.

The main driver of agriculture in the county is the vast system of canals and reservoirs past generations toiled on to secure our future. Most successful agricultural operations in the western states are linked to a dependable and clean supply of irrigation water. Teton County ranks as one of the highest in the state with 125,000 irrigated acres. In addition, the county has 258,700 acre/feet of storage available to distribute that supply evenly over the growing season in most irrigation projects. Numerous public and private organizations are all working together to develop new technology, practices, equipment, and varieties to better use the water resources we have available.