



September 15, 2012

This past year—as in so many since the recession hit—has been full of challenges for Colorado residents. For CSU Extension agents across the state, working with county and state leaders adds value to great programs and enhances the quality of life for everyone in the state. This year, we were very pleased to have worked with county commissioners and stakeholders in 60 Colorado counties; programs are now available in Clear Creek County (with our new office located in Georgetown). These funds were specially provided by CSU President Tony Frank.

In Colorado we celebrate 100 years of service to local communities this year, adding value by connecting our local agent talent and our campus specialists with community and state priorities. On October 1, 1912, our first office opened in Logan County, followed shortly after with offices in El Paso, Pueblo, Mesa, Boulder, Morgan and Prowers counties.

New concerns about food safety—in addition to more familiar concerns of periodic drought and wildfires—and economic challenges are all part of daily life for Coloradans. Extension agents living and working in local communities know firsthand the issues that university researchers can address. The recession has not diminished our mission to serve Colorado.

Nationwide, land-grant universities are celebrating the 150th anniversary of the signing of the Morrill Act (July, 1862). This historic bill provided the means for the vast majority of citizens to have access to a higher education and led to the eventual formation of Extension and the agricultural experiment stations. Reflecting on the Morrill Act, CSU President Frank recently wrote that the bill's root was to assure, "...that every American with the talent and motivation to earn a university degree should have the opportunity."

Extension in Colorado has the same outlook. We understand that every Coloradan with the desire and motivation to learn about solutions to their local issues should have the opportunity to access that information through a reliable network of world-class research and a viable structure of information dissemination. We hope to continue to earn each of the promotional taglines we use: '*Your source for credible information*' and '*We are here for you*'.

Unquestionably, Extension has been affected by the recession. Statewide we have lost the equivalent of 16 Extension agents as state and now federal funding have receded. However, these funding challenges also have created an opportunity to reemphasize and rededicate our energies to local and regional issues and demands. Our people and their partnerships with our communities continue to be our greatest asset.

Please take a few minutes to read about the work being done by Extension agents, specialists, support staff and volunteers throughout the state. I welcome your comments and suggestions for our future work.

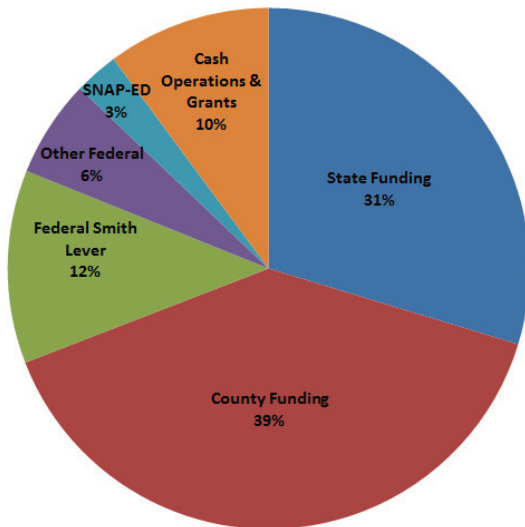
Lou Swanson
Vice President for Engagement
Director of Extension

CSU Extension provides services in 60 of 64 Colorado counties and delivers community development and university-based information and education. Topics include agriculture and natural resources, small acreage management, food safety and nutrition, 4-H youth development, and gardening and landscaping education through the Master Gardener, Native Plant Master and related programs and more.

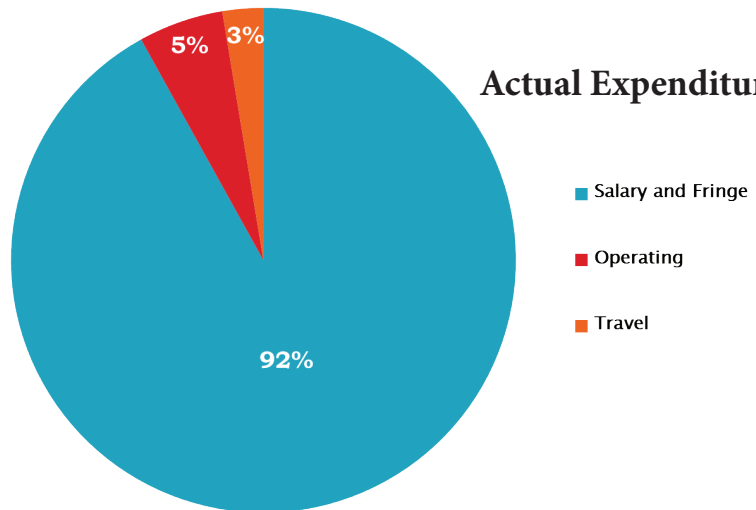
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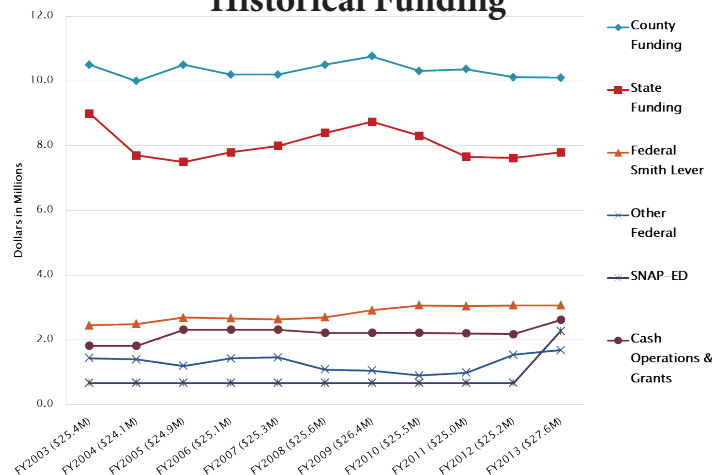
Funding Sources (\$25.7M)



Actual Expenditures



Extension Historical Funding



Volunteers

Certified Master Gardeners

- 1,550 CMG volunteers
- 65,100 volunteer hours contributed
- \$1,407,462 value of volunteer time
- 108,700 one-to-one contacts reported

Master Food Safety Advisors

- 47 MFSA volunteers
- 1,837 volunteer hours contributed
- \$39,448 value of volunteer time

Native Plant Masters

- 395 NPM volunteers
- 3,207 volunteer hours contributed
- \$69,335 value of volunteer time

4-H Youth Development

- 11,970 volunteer leaders
- 1,532,160 estimated hours contributed
- \$33,125,299 estimated value of volunteer time

For more information, visit us online at www.ext.colostate.edu, or contact Joanne Littlefield, Director, Outreach & Engagement email: Joanne.Littlefield@colostate.edu (970) 491-4640
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Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

Measuring Life Skill Development in the Larimer County 4-H Program

One of state's largest 4-H programs help youth grasp decision-making skills, work out problems, use technology appropriately and more.

Situation

Benefits of the 4-H program in Colorado have historically been communicated through anecdotal evidence and personal success stories. These typically reflected the quality of the programs through the gut feelings of those familiar with 4-H, but did not demonstrate the public value of the youth development program in quantifiable measures.

Extension's Response

In the summer of 2010, data were collected related to life skill development of Larimer County 4-H members in organized 4-H clubs. The purpose of this study was to gather and provide sound, research-based information to the public about the effect 4-H membership has on the lives of young people. Larimer County Extension 4-H collected 90 surveys that were administered at the county fair and regular 4-H club meetings.

The life skills measured were:

1. Working out problems
2. Using resources wisely
3. Planning a project
4. Making good decisions
5. Using project tools
6. Using technology
7. Following instructions

Demographic data collected were:

1. Years in 4-H
2. Age
3. Gender

Responses to the seven life-skill-related questions were reported on a four-point Lickert scale of:

1. Yes – always
2. Usually
3. Not Often
4. No – never

Open-ended comments about their 4-H experience were also collected from those 4-H members who voluntarily provided that information.



The Bottom Line

- Larimer County has the largest 4-H club program in Colorado with 1,071 4-H members and 427 adult volunteer leaders.
- Each year more than 60 educational project workshops are made available to 4-H members, leaders and parents.
- 42 Larimer County youth have been 4-H members for more than 10 years.

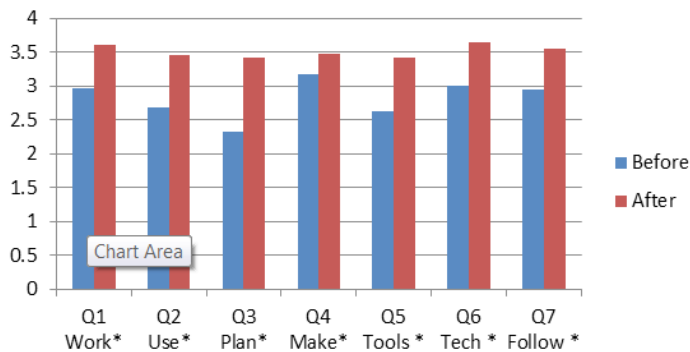
Impact

A Chi Square statistical analysis was conducted comparing those new to 4-H (junior 4-H members, ages 8-11) with more experienced 4-H members (intermediate and senior 4-H members, ages 12-18). This comparison treated the less-experienced members as a quasi-control group.

There was a significant positive difference between pre-and post-scores when all the data were analyzed separately and also when grouped together as one experimental treatment group. Results of the pre- and post-responses are shown on the following graph.

Mean Responses for All Questions

*Significant Difference (P<.05)



While all mean responses show a significant difference between pre- and post-measures, the two questions with the greatest change between pre- and post-mean scores were Q3 – Planning a Project, and Q5 – Using Project Tools.

Change in Mean Scores Pre- and Post-test

	Pre-test	Post-test	Change
Q1 Work Out Problems	2.98	3.61	.63
Q2 Use Resources Wisely	2.68	3.46	.78
Q3 Plan a Project	2.33	3.43	1.10
Q4 Make Good Decisions	3.18	3.48	.30
Q5 Use Project Tools	2.64	3.43	.79
Q6 Use Technology	3.00	3.66	.66
Q7 Follow Instructions	2.95	3.56	.61

A statistical analysis was conducted on the responses of 90 Larimer County 4-H members. The seven questions that 4-H members responded to were retrospective life-skill-based questions gained in their 4-H experience. Members were asked to respond to those questions as they would have prior to their 4-H experience and after their 4-H experience.

4-H is a community of young people across Colorado learning leadership, citizenship, and life skills. One hundred years of research-based programs and experience bear significant results. Research shows that youth involved in 4-H are more likely to develop the “five C’s” (competence, confidence, character, caring and connection). Through participation in 4-H programs, youth are more likely to be at the highest level of contribution in their communities.

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. Updated June 2012.

“I’ve become a better listener, a better follower and a better leader. It’s helped me find some of my character.”

“I have gotten experience in working through mostly self-initiated long term projects, a skill that has been useful in high school. I have also gotten to explore many creative possibilities.”

“4-H has made me a more responsible person. It has made me more independent and has made me start solving problems by myself. 4-H has made me open up to new ideas and assistance.”

“4-H has taught me lessons that I can take with me for the rest of my life. I’ve learned leadership, cooperation, time management, communication, responsibility, the list goes on and on. Without 4-H I don’t know how I would have attained these skills.”

-All comments from Larimer County 4-H Members

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Impact

Colorado State University
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Sharing the difference CSU Extension makes in people's lives and their communities.

Closing the gap between home and school

A Southwestern Colorado-based program helps students, teachers and parents find common ground, gain skills and succeed.

Issue

Cultural differences and a history of misunderstanding exists among the diverse populations of the Four Corners region of Colorado and New Mexico. Over the years, this dynamic has complicated relationships between families and schools. Colorado State University Extension educators became concerned that this limited children's ability to succeed in school.

Extension's Response

The *DARE to be You (DTBY) Bridges* program seeks to strengthen family-school relationships and support children's success in school. *Bridges* is a researched-based component of CSU Extension's *DARE to be You 4-H Youth Development* programming. The program focuses on children in kindergarten through second grade, their parents, and teachers.

CSU Extension piloted *DTBY Bridges* from 2001 to 2005 as part of a research study funded by the U.S. Centers for Disease Control. The program took place in several Navajo Nation communities surrounding Shiprock, New Mexico, and in a multi-ethnic community located in Southwestern Colorado. Both sites had high rates of school dropout and substance abuse.

DTBY Bridges brings parents and children together with their teachers in an 11-week curriculum. Each week DTBY facilitators guide participants through 2.5 hours of activities that help develop children's self-esteem and enhance parent and teacher self-confidence. Ultimately, participants learn better ways to communicate, solve problems and make decisions that benefit the entire family.

In particular, parents learn to create positive home environments that support academic success. They also learn the benefits of volunteering at their child's school and attending events. Teachers learn that they have a lot in common with families and gain insight into different cultural values. Youth activities develop self-responsibility, empathy, communication, problem-solving and decision-making skills. Parents and teachers spend a portion of each session working together under the guidance of a trained adult program facilitator. Youth break into separate but concurrent workshops led by a child program coordinator and trained teens.

In each year of the study, *Bridges* facilitators recruited teachers to participate. Classrooms were randomly chosen to participate in weekly classes and take surveys, or to only complete surveys. Overall, 346 adult family members, 305 children ages five to seven, and 80 classroom teachers from both study areas participated.



The Bottom Line

- *DARE to be You Bridges* is a researched-based program that raises awareness of the strong link between educational success and future achievement.
- *Bridges* increases parent engagement in schools and builds their skills in creating positive home environments that support educational success.
- In 2006, the Annie E. Casey Foundation and the National 4-H Council awarded *DTBY Bridges* the *FAMILIES COUNT Family Strengthening Award* for giving children in rural communities what they need most—strong, capable and economically successful families.

Impact

Extensive evaluation of *DARE to be You Bridges* participants confirms that the program successfully generated several positive outcomes. Parents witnessed teachers having an improved commitment to their child. They also learned to effectively communicate their expectations for the parent-teacher relationship. At the same time, teachers found new inspiration in parents' commitment to their child's progress in school. They also reported a new appreciation for parents' strengths and say they understand more clearly the challenges that some families face. Parents and teachers agree that parent involvement is important—teachers alone do not always know what is best for children, and families have more responsibility than teachers for teaching children to be respectful and polite.

All evaluation instruments followed rigorous social science protocols that generated statistically valid and reliable data. Evaluation of *Bridges* included several components:

- External evaluators conducted individual interviews with parents, teachers and children at 6-, 12- and 18-month follow-up intervals.
- Teachers, parents and children completed self-report surveys which measured parental efficacy, child-rearing practices, depression, perceptions of school and family relationships, teaching efficacy, perceptions of families, personal efficacy, and perceptions of school.
- Teachers and parents also completed surveys on youth.

Other findings:

Parents

- Are more confident and satisfied with parental role;
- Learned and used new and effective home management skills;
- Reported becoming more engaged with the schools.

Teachers

- Saw families in a more positive light;
- Felt more positive about their relationships with families and students;
- More able to empathize with cultural differences;
- Improved spirit of collaboration with parents.

Students

- Showed less aggressive classroom behavior;
- Increased their social skills;
- Improved their perception of school.

Previous research shows that effective communication between families and schools is linked to increased educational success for children. According to CSU Extension, academic success during the early school years is one of the most compelling factors that keep children from adopting risky behaviors later in life.

The success of the Bridges pilot warrants further study to see if these positive changes can be replicated with new populations and different communities. Findings from such studies may hold important keys for understanding why youth success in school is decreasing across the nation.

“Making schools work takes an ongoing commitment on the part of parents, teachers and children. We give them the opportunity to get in a room together, to get to know one another and to find the motivation to work towards a common goal: ensuring the best education possible for their children.”

– Jan Miller-Heyl

program director DARE to be You Bridges (DTBY)

DARE to be You

In 1979, Jan Miller-Heyl created *DARE to be You* to generate positive youth outcomes through early prevention education for parents and children. The acronym DARE stands for:

Decision-making
Assertiveness
Responsibility
Esteem

DARE to be You has several researched-based components, such as *Preschool Families*, *Care to Wait* and *Peer Educators*. *DARE to be You Preschool Families* is listed on the *National Registry of Effective Prevention Programs* and has a 'Model Family Program' designation for substance abuse and delinquency prevention. Program director Jan Miller-Heyl and colleagues from CSU's School of Human Development and Family Studies adapted and merged curriculum from *Preschool Families* and *Peer Educators* to create *DTBY Bridges*.

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Impact

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Interactive training teaches 4-H youth how to care for livestock

A new, interactive and self-directed training is improving how 4-Hers learn and retain the 'meat quality assurance' standards they need to understand for proper animal care and food safety. This in turn leads to a future of safe food production practices as youth become agricultural producers.

Issue

Since 1995, Colorado 4-Hers enrolled in livestock projects have been required to attend Meat Quality Assurance (MQA) trainings. Colorado State University Extension 4-H and livestock agents began presenting the MQA curriculum via classroom-based PowerPoint presentations. However, this format didn't actively engage youth. In particular, younger members often failed to retain important skills and information.

Extension's Response

In 2006, Colorado State University Extension 4-H agents piloted 10 interactive and self-directed MQA trainings in Northeast Colorado counties. The revised MQA training uses interactive, topic-based learning stations and forgoes classroom teaching. Each station integrates one or more visual learning tools, such as models, displays, hands-on activities and digital picture frames that show the right and wrong way to handle and care for livestock. Participants go at their own pace from station to station, completing activities and answering questions on a companion worksheet.

Following the pilot trainings, youth and parent feedback indicated that the new learning format was more interesting, fun and helpful than classroom instruction. Based on this success, the Northeast Colorado MQA team acquired funding to create more stations, standardize the curriculum for all counties and agents, and offer the program regionally. In 2009, the Northeast Colorado MQA team turned the interactive MQA training into a mobile learning lab that features 14 stations and travels March through mid-May. Stations cover:

- evaluation of facilities
- animal identification
- health issues
- injection site determination
- proper drug and biological product use and storage
- nutrition
- feed manufacturing
- animal handling skills

Youth pay a one dollar re-stocking fee to participate. All first year 4-H members and all first year senior members who are enrolled in livestock projects must attend MQA trainings, although these requirements vary from county to county.

In 2011, 2,400 youth from 35 counties attended one of 44 mobile MQA trainings. CSU Extension agents logged 7,500 miles traveling the length of Eastern Colorado to the San Luis Valley, Western Slope, Yampa Valley and along the Front Range. Even so, the learning lab cannot serve all Colorado counties due to time and distance constraints.



The Bottom Line

- Extension's interactive mobile MQA learning lab does a better job teaching 4-Hers how to produce a safe, wholesome and nutritious product than lecture-style instruction.
- The new MQA training format has increased parent involvement. More parents attend MQA trainings than ever before.
- Parents who farm and ranch often change production practices to align with what their children learn through MQA.
- CSU Extension's interactive MQA format is designed to engage multiple learning styles and all ages.

By the Numbers

From 2011

- Number of interactive MQA trainings: 44
- Number of youth trained: 2,400
- Total trailer miles traveled: 7,500

Impact

In 2009, 706 Colorado 4-H members from 18 counties were surveyed after attending an MQA training. In the study, 323 youth from five counties attended MQA trainings delivered in the self-directed, hands-on format and 383 youth from 13 counties attended MQA trainings delivered in the lecture-style format.

All youth completed an eight-question knowledge survey. Results showed significantly higher knowledge gains among hands-on learning versus classroom instruction in some areas: antibiotics, animal identification, and the labeling and administration of prescription medication. This is the only survey to date that compares knowledge gains between learning formats. According to Mick Livingston, Golden Plains Area Extension 4-H agent, future MQA evaluation will continue measuring the difference between the two learning formats.

In the meantime, follow-up evaluation data from subsequent MQA trainings reinforces the effectiveness of the hands-on learning format. The 2011 MQA survey asked participants to rank their knowledge gains relative to information presented. The survey also asked participants to rate the likelihood that they will properly care for and handle animals, make ethical decisions, be more careful about storage of medications and ask others for help. As a result of attending the workshop:

- 94.5 percent report that they already do, or always will use proper animal care and handling.
- 93 percent report that they already do, or always will be more careful about medication storage.

Youth evaluation responses indicate that interactive learning has a positive impact:

- *I liked the stations instead of the lecture.*
- *I learned more from MQA. It was fun.*
- *More exciting and fun to learn than last year.*

Many parents had similar comments, including:

- *I liked the hands on. My son got a lot more out of it.*
- *I think the hands-on (approach) did a better job of keeping their attention.*
- *Really like this new program with hands on instead of reading and testing.*

Livingston says parent involvement in the interactive MQA training is a strong improvement over classroom instruction. "Parents used to just drop the kids off and come back at the end. Now they stick around and go through the training with their kids," he says. "I even have parents telling me that they are going to have to change the way they do things at home because of what their kids have learned and shared."

To cut down on travel miles and expense, CSU Extension 4-H agents from Western Slope counties are developing a second mobile MQA learning lab that will primarily serve Mesa, Delta, Montrose, Gunnison and San Miguel counties. It will be available for use anywhere in the state.

"It's great to see the excitement as the youth go through the various stations, from feed to medications to ethics. We knew we developed a teaching model that works."

– Mick Livingston
Golden Plains Area Extension 4-H agent

What's Inside

Each of the MQA mobile lab's 14 stations covers one of the 'Ten Good Production Practices' developed by the pork industry in the 1990s and the foundation for 4-H MQA in Colorado. The 10 practices are:

1. Establish and implement a herd health management plan;
2. Use a veterinarian/client/patient relationship as the basis for medication decision-making;
3. Use antibiotics responsibly;
4. Identify and track all treated animals;
5. Maintain medication and treatment records;
6. Properly store, label, and account for all drug products and medicated feeds;
7. Educate all animal caretakers on proper administration techniques, needle-use procedures, observance of withdrawal times, and methods to avoid marketing adulterated products for human food;
8. Follow appropriate on-farm feed processing and commercial feed processor procedures;
9. Develop, implement, and document an animal caretaker training program; and,
10. Provide proper animal care to improve animal well-being.

Sponsors & Partners

CHS Inc.
Colglazier Livestock

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At-risk youth prosper in 4-H afterschool program

4-H afterschool programs at St. Charles Recreation Center in Denver are helping neighborhood kids learn, work together, interact with positive adults, and build community.

Situation

At the end of the school day many youth face hours of unsupervised and unstructured time. Denver's St. Charles Recreation Center, located on the inner city's northwest edge, is a regular afterschool destination for more than 100 neighborhood youth. Yet, at-risk youth also need to engage with caring adults who can engage their curiosities and hold them accountable for their actions.

Extension's Response

In September 2009, Denver County Extension 4-H started weekly afterschool programming at St. Charles Recreation Center. Although Denver 4-H has previously partnered with the Denver Parks and Recreation Department to offer programming, the ongoing drop-in afterschool program at St. Charles is the first of its kind in the Denver metropolitan area.

Afterschool programs currently focus on science, cooking, and arts and crafts. 4-H volunteers offer three to four weekly, drop-in sessions that last 60 to 90 minutes and are free of charge. Each session features a hands-on activity. Daily attendance varies from five to 20 students, although many programs are capped at 15 students. Amy Brady, CSU Denver County Extension 4-H program associate, recruits, trains and supports the 4-H volunteers. She also assists with instruction. St. Charles Recreation Center provides the classroom space and purchases all program supplies.

Afterschool programs emphasize life skills, particularly problem solving, resiliency, sharing, conflict resolution, self-responsibility and cooperation. Volunteer instructors also create a welcoming and safe learning environment. In addition:

- Science programs explore the mysterious intricacies of engineering, physics, the natural world and everyday life. Weekly experiments engage youth in critical thinking, collaborative problem solving and independent learning. Students build volcanoes, make chalk, suck the air out of marshmallows, drop eggs, engineer harmonicas and much more.
- Cooking classes expose kids to unfamiliar ethnic, regional and international foods, such as East Indian samosas, Hopi stew and French beignets. Youth share responsibilities for cooking and cleaning. They also help each other learn skills such as measuring, slicing and mixing. In order to participate in class, youth agree to taste the foods they make as they eat together.
- Arts and crafts programs focus on individual creativity and expression. Projects have included holiday crafts, clay pots, creative painting techniques and building recycled material sculptures.

A total of 1,750 youth from five to 14 years in age have participated in afterschool programs at St. Charles. Of these, 99.5 percent represent minority populations.



The Bottom Line

- 4-H afterschool enrichment programs help at-risk youth develop critical life skills and a love for learning.
- 4-H afterschool enrichment programs engage at-risk youth with caring adults who can engage their curiosities and hold them accountable for their actions.
- CSU Denver County Extension 4-H programming is helping build community by developing strong youth.

By the Numbers

- Total number of youth served since 2009: 1,750
- Average monthly budget for afterschool programs: \$150
- Meals cooked: more than 50
- Experiments conducted: more than 75
- Age range of afterschool participants: 5 to 14 years

Results

The St. Charles Recreation Center 4-H afterschool program has promoted youth, family and community development at levels that far exceed the expectations of program partners. According to recreation center director Casey Howshar, “We could offer programs five days a week, there’s that much interest.”

4-H volunteers report that youth have gained confidence, knowledge and important life skills, such as collaborative group problem solving. Cooking, science and art programs require youth to work together to accomplish tasks, share responsibilities and help each other learn. Programs also provide youth what they don’t get in schools: hands-on learning, an intimate learning environment and an opportunity to engage in meaningful dialogue with a caring adult who isn’t pressured to get through a lesson plan or concerned about test performance.

“I’ve seen a total transformation of their knowledge,” says Rachel Foster, a 4-H volunteer who leads one of the weekly science programs. Science concepts such as ‘liquid versus solid state’ were foreign to students when they first started out. Through hands-on experiments that bring concepts to life, understanding blossomed. Now, experienced youth help less experienced youth understand scientific concepts. “I don’t have to be the active explainer anymore,” Foster says. She has also witnessed her participants apply inquiry and group skills to their everyday curiosities. “My science club has changed from a room full of blank stares to a room full of scientists,” she says.

According to 4-H volunteer Rebecca Revoal, who leads weekly cooking sessions, helping kids relate to each other and to her is one of the most valuable aspects of the program. Revoal explains, “They learn about how to interact with people, about teamwork and working with people who may irritate you at school. We cover a lot of life lessons and what’s going on in their lives. We all have to meet each other where we are.”

Revoal also uses cooking as a way to develop character and explore the unknown by working in partnership with a caring adult. According to Revoal, at first the kids didn’t want to try foods that were unfamiliar. “I told them you have to try new things and step out,” she says. “It’s fine if you don’t like something, but you have to try it. That’s what this is about. Now I rarely have to say anything.” Revoal reports that some students have begun requesting favorite recipes and are making and eating them at home with their families. “They’re starting new family traditions,” she says.

As a result of increasing visibility in the community, Denver County Extension 4-H has added regular weekly school enrichment programs at Annunciation Catholic School, located just three blocks from St. Charles. Denver County Extension 4-H will expand into two additional inner city recreation centers in the fall of 2011.

“Students are extending their collaborative and critical thinking skills beyond the classroom.”

– Rachel Foster
4-H volunteer

“This community is starting to transform because their kids have a place to go and they’re learning.”

– Amy Brady
Denver County Extension 4-H Program Associate

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Targeting more than activities

Leadership and life skills increase, adult-youth partnerships strengthened, through Delta County 4-H shooting sports.

Situation

Delta County community support for the 4-H shooting sports program has always been strong; in the early 2000s the county government sponsored and dedicated a 4-H shooting range. Member involvement steadily grew in every discipline—archery, .22 rifle, air pistol and air rifle, muzzleloading and shotgun—even while increased youth participation was limited because of a shortage in certified leaders. These adults are pivotal in helping youth develop leadership and life skills.

Extension's Response

In 2003, Delta County 4-H Youth Development agent for Colorado State University Extension, Isaac Muñoz, in cooperation with 4-H shooting sports leaders, created a countywide program that streamlined practice sessions and consolidated and strengthened volunteer efforts.

- Under the guidance of certified leaders, members started practicing together by discipline, not by club. They made new friends, created bonds over common interests and were exposed to other 4-H members of all ages.
- Both member and leader participation grew. Increased member enrollment led to more parents becoming certified leaders.
- Volunteer certified leaders worked more closely together, regardless of club affiliation.

Next, Muñoz established a volunteer-led county 4-H shooting sports leader's council to develop by-laws, elect officers, schedule season-wide events (including practices and competitions), organize the county invitational, provide shooting safety training, and resolve issues as they arise. According to Muñoz, the council increased volunteer involvement and encouraged greater ownership of the program.

Muñoz and fellow Tri River Area 4-H Extension agents also created two new opportunities for youth members. Tri River Area counties (Delta, Montrose, Mesa and Ouray) were encouraged to each host an invitational shoot. These separate competitions replaced a combined Tri River Area Invitational and offered members a chance to gain experience competing in other counties. Muñoz says this prepares members for larger competitions, such as the state shoot and national invitational.

Next Muñoz introduced the *State 4-H Shooting Sports Junior Leader Program* for experienced shooting sports members ages 14 to 18. To become a Junior Leader, members complete the same leader certification training as adults. Junior Leaders develop leadership skills by mentoring younger members and working alongside adults at practice shoots and invitationals. Muñoz says this component offers older 4-H members a meaningful way to stay involved by developing leadership skills, giving back to the program and sharing their experience.



Members and coaches of the 2011 State Grand Champion Muzzleloading Senior Team were from Delta County 4-H (above). In addition, the .22 Hunt Rifle Senior Team earned State Reserve Grand Champion and the Compound Limited Bow Jr. Team placed fourth in the state.

Safety First

- Leader certification, required by the Colorado 4-H shooting sports program, ensures youth and volunteer safety, at all times. To earn certification, volunteers complete a standardized, discipline-specific, two-day course that teaches program management, proper shooting technique and how to safely run a shooting practice and competition.

Results

Nationwide, 4-H shooting sports is known for its ability to help youth develop essential life skills. Through periodic interviews, Colorado shooting sports members say they have learned respect, discipline, self-control, leadership, problem-solving, sportsmanship and role modeling. In Delta County, the switch to a discipline-focused, countywide program strengthened youth-adult partnerships that went on to develop life skills in teamwork, cooperation, sharing, and contributing to a group effort.

The change also resulted in programmatic success. Leadership-by-discipline built new efficiencies and expanded the overall volunteer base, allowing youth members the opportunity to work closely with a greater number of caring adults. The countywide program has also improved communication and trust among leaders, members and parents. "There's a higher level of accountability for our actions since we're all role modeling for each other and the kids we work with," says Muñoz.

Members and leaders have all benefitted from the Junior Leader program. According to junior leader Ben Gruber, feedback from adult leaders on how he works with junior members has taught him to be a better leader and role model. "It's a pretty cool reward being able to say I helped a kid get a skill," Gruber says.

According to junior leaders Kasey Miles and Tory Welt, the learning goes both ways. Junior Leaders bring first-hand, youth-focused shooting experience that helps them relate easily to younger members. "A lot of times the junior leaders can give shooting advice and the kids will understand better than when the adults tell them," says Delta County 4-H volunteer leader and parent, Heidi Simpson. As a result, adults often learn how to improve younger members' shooting technique by following suggestions that junior leaders share.

Miles and Welt say the junior leader program also provides the unique opportunity to witness and learn how to collaboratively problem-solve. By watching adults work through differences, they develop insight on effective problem solving and learn to respect opposing viewpoints. According to Miles, working with adults has increased his respect and ability to ask questions. "I can talk to anyone and be alright with it," he says.

Simpson says that role modeling is just one of the many benefits of the junior leader program. "My son is nine and he wants to emulate everything the junior leaders do," she says. As a result, discipline, when it comes from a peer, means more than when it comes from an adult.

For junior leaders, the role modeling from adults is equally important. "We've had the privilege of learning life lessons of responsibility and respect," Welts says. "They don't just stand back and watch us. They are very hands on."

"Working with adults is just a great pleasure."

– Kasey Miles, Delta County 4-H shooting sports member, and 2010 State 4-H Shooting Sports Ambassador

"Without this being a countywide program, we wouldn't be where we are."

– Isaac Muñoz, Delta County Extension 4-H agent

"When issues come up, we can now address these based on the common good, rather than individual interests. I believe that overall, there's a higher level of trust among leaders, members and parents."

– Vicki Miles, volunteer 4-H shooting sports leader and parent

"It's one of the best sports for developing discipline and leadership skills. It's one of those great things in 4-H."

– Heidi Simpson, volunteer 4-H leader and parent

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Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

Business training increases farmers' success

By learning to manage financial and production risks, Boulder County Building Farmers participants have increased their sales, expanded operations and developed new markets.

Issue

Across the country, demand for locally grown food at home, in restaurants and in schools has generated a growing segment of market farmers—producers who grow and sell vegetables, fruit, eggs, meat, dairy and other food products directly to consumers and retail customers. In Boulder County, many agricultural producers who want to fill this demand have limited to no agricultural business background and don't yet understand, or know how to manage, their financial and production risks.

Extension's Response

Since 2007, Colorado State University Extension in Boulder County has helped farmers learn how to better manage their business risks through *Colorado Building Farmers*. The eight-week course, offered in the fall, is designed to help both new, intermediate and experienced farmers assess their ability to start and maintain a new farm operation, or expand and improve the business management of an existing one. *Colorado Building Farmers* was developed by Adrian Card, a Boulder County Extension agent in agriculture and natural resources, Dawn Thilmany, professor and Extension agribusiness economist, and Martha Sullins, Extension specialist in agriculture and business management. A local advisory committee provides oversight.

The program offers weekly networking, business planning, management and marketing classes presented by experienced local farmers and ranchers, and agriculture professionals. Farmers and ranchers provide first-hand information on topics such as developing cost-effective production strategies, projecting seasonal labor needs and diversifying production enterprises. The program also helps participants understand how to plan for and succeed in local markets, and provides access to producer networks for agricultural inputs, financing, technical support, and water resources.

Card designed the evening class to begin with an informal, communal dinner prepared from locally grown food. He says the relaxed atmosphere helps participants get to know each other. As a result, they develop camaraderie through the exchange of experiences and engage in an increasingly supportive learning environment by readily sharing knowledge and resources.

Colorado Building Farmers culminates with participants presenting their business plans to fellow classmates, Card and other Extension personnel who all offer feedback on feasibility, strengths and recommended improvements.



The Bottom Line

- CSU Extension provides a growing segment of market farmers and ranchers with the business skills and financial risk management strategies they need to succeed.
- *Colorado Building Farmers* is becoming an important incubator for Colorado's local and regional food production and marketing systems.

By the Numbers

- Total farmers trained since 2007: 105
- Percent of farmers who would recommend class to others: 100
- Percent encouraged to follow their farming dreams: 95
- Percent using CSU Extension staff, programs, or web for technical or business planning assistance: 76
- Percent using Building Farmers class materials since they first participated: 72
- Cost to participate: \$90 - \$220

Impact

Survey results from four years of *Colorado Building Farmers* in Boulder County show the program is providing direct-market farmers with the skills, resources and confidence they need to improve their business management practices and decision-making. Farmers report that the program has helped them improve production and management know-how, develop new markets and diversify marketing.

In 2011, CSU Extension conducted a longitudinal survey to evaluate the operational outcomes and business practices of farmers who participated in *Colorado Building Farmers* in 2007, 2008 and 2009. Participants from 2007 reported on three seasons of farming (2008, 2009 and 2010); 2008 participants reported on two years; and, 2009 participants reported on one year. From approximately 88 surveys sent, 45 participants responded, a response rate of 51 percent.

The survey asked participants to consider, since taking the course, any business changes, potential impacts, limitations and marketing endeavors they either encountered or initiated. More than 50 percent of participants, from all three years, reported increases in:

- Diversity of products grown
- Infrastructure and equipment used in their operations
- Customer base
- Variety of marketing outlets used
- Total product sales
- Amount of land area cultivated
- Total operating expenses and investments
- Creating/using new marketing materials

According to Card, overall results indicate that the course is meeting CSU Extension's goal of helping farmers manage risk and identify appropriate business growth strategies by developing business plans.

For example, evaluation data show that, after taking the *Colorado Building Farmers* class, nearly all participants no longer find business planning to be a limitation to developing their agricultural businesses. In fact, 62 percent of respondents indicated that having a well-defined business plan has had a moderate to great impact in their businesses. They listed keeping better production records, making additional business investments, and having more experience and an established reputation in the agricultural community as contributing the most to improving decision-making in their businesses.

Colorado Building Farmers is becoming an important incubator for Colorado's local and regional food production and marketing systems, with many aspiring producers taking the course before investing in their operations. Card says that this approach helps them to avoid making misguided investments. It also builds a community of producers who can mentor, apprentice and guide new entrants so that the food system provides a sustainable business opportunity in agriculture, and better serves the needs of the local buying public.

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"The most valuable skill we learned from the class was to actually plan out what we were going to do. It may not turn out that way, but we learned that if you make the most realistic and informed plan, you at least have a map to guide your day-to-day decision making. This has enabled us to move our business forward to a point where we are both full time farmers."

– Nic Koontz, Native Hill Farm
2009 & 2010 *Building Farmers* Participant

Program Expansion

In 2009, *Colorado Building Farmers* expanded to four other Colorado counties through funding from the Western Center for Risk Management Education. The program's overall success has captured national attention by receiving a three-year, \$748,000 grant from the USDA Beginning Farmer and Rancher Development Program to create *Building Farmers in the West*. The program is training producers in Colorado, Idaho, Oregon, New Mexico, Nevada and Washington to successfully enter and compete in emerging markets. Classroom and experiential learning is tailored to individual communities.

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Impact

Colorado State University
Extension

Sharing the difference CSU Extension makes in people's lives and their communities.

Improving wheat variety adoption through Collaborative On-Farm Testing

Colorado farmers are more rapidly adopting new, high yielding wheat varieties with help from CSU Extension's on-farm testing program.

Issue

Every year Colorado wheat producers select which wheat varieties to plant from a pool of high-yielding cultivars. Public and private wheat breeders develop cultivars for superior adaptation to Colorado's unpredictable and diverse growing conditions. As new, promising, research-proven varieties enter the market, farmers might be reluctant to change varieties without credible proof that a new variety will work on their farm.

Extension's Response

In 1996, CSU Extension crop production specialist, Jerry Johnson, created the Collaborative On-Farm Testing (COFT) program to help speed adoption of new, high-performing wheat varieties. Through COFT, wheat producers test new wheat varieties in their fields, before the seed is marketed and available to the public. COFT is a partnership between farmers, CSU Extension field agents, CSU campus-based Extension specialists and the Colorado Wheat Research Foundation (CWRf).

Each fall CSU Extension agents recruit farmers from across Eastern Colorado to plant four to six recently released public and private wheat varieties. Extension agents provide farmers with seed and help with field selection and planting. Agents then help producers monitor fields and harvest wheat, collect samples, determine yield and report results to Johnson. COFT farmers use their own management practices, resources and equipment.

The overall objective of the COFT program is to compare performance and adaptability of popular and newly released varieties. The 2011 program included four CSU releases (Hatcher, 2004; Ripper, 2006; Bill Brown, 2007; and, Snowmass, 2009) with promising commercial varieties from West Bred (Winterhawk, 2007) and Watley Seed (TAM 112, 2006).

In the fall of 2010, 23 Eastern Colorado wheat producers planted approximately 1.25 acres of each variety in side-by-side strips. Plots were located in Baca, Prowers, Kiowa, Cheyenne, Kit Carson, Washington, Yuma, Phillips, Logan, Adams and Weld counties. Despite early season below average moisture in 2010-2011, viable harvest results were obtained from 20 of the 23 tests.

CSU's crops testing program publishes COFT trial results online at www.csucrops.com and in its annual "Making Better Decisions" report, which includes results from all variety performance trials conducted across Eastern Colorado. The CSU wheat improvement team and a representative from Colorado's wheat industry present the report at several planting decisions meetings held across Eastern Colorado every August. The Colorado Wheat Research Foundation sponsors the meetings.



The Bottom Line

- Supported by the Colorado Wheat Research Foundation since its inception, COFT is unique to Colorado—no other state engages farmers in wheat development through large-scale, uniform on-farm variety testing.
- COFT speeds the overall adoption of new varieties around the state, increasing total annual wheat production. CSU reports that its varieties led to an economic impact worth \$18 million in 2010 alone.

By the Numbers

- Percent of CSU-bred wheat planted each year in Colorado: 70
- Record state average wheat yield (bushels per acre set in 2010): 45
- Wheat's rank in Colorado commodity crop production: Second (with a \$600 million industry)
- Colorado's rank in U.S. wheat production: Sixth

Impact

Rapid adoption of new wheat varieties is the primary goal of COFT. Scott Haley, who leads CSU's wheat breeding and genetics program, says the value and benefit of rapid adoption comes down to economics. "If farmers wait four or five years to plant a new variety, they can miss out on the opportunity to make more money," Haley says. In a bumper crop year, such as 2009-10, that difference could translate into thousands of dollars.

For example, 'Hatcher' has become the most planted variety in Colorado. According to the National Agriculture Statistics Service (NASS), in 2010 Colorado growers seeded 26.5 percent of an estimated 2.4 million acres in 'Hatcher' alone. Haley says the hard red winter wheat variety averages 10 percent more bushels per acre than many other known varieties. In 2010, 'Ripper' was the second most seeded variety (12.5 percent of acres). Six of the top 10 most seeded varieties in 2010 were developed by CSU.

According to Jay Parsons, CSU agricultural economist, analysis of just three CSU varieties—Hatcher, Ripper and Bill Brown—indicate an \$18,000,000 economic impact on Colorado's wheat industry in 2010. Variety selection is a business decision that comes with risk. CSU Extension COFT trials, as well as its performance variety trials, are organized specifically to provide information that can lead to decisions that might minimize this risk. Results from a 2010 CSU Extension survey of 297 Colorado wheat growers strongly suggest this is occurring. Growers ranked COFT trials as the most important source of information for wheat variety selection.

CSU Extension encourages farmers to make a variety decision not based on a single on-farm test, but by considering results from a large number of on-farm tests, as well as results from CSU's performance variety trials. "It is imperative that farmers consider results from multiple years," says Johnson. COFT farmers are at an advantage in this regard. According to Ron Meyer, CSU Extension agronomy agent in the Golden Plains area, participating COFT farmers value the opportunity to test leading edge wheat technology on their own farm. By harvest, they have increased confidence regarding which varieties will work.

COFT also builds a valuable communication network among Extension agents, participating farmers and their neighbors. Farmers track variety performance throughout the growing season and share their observations with Extension agents, who regularly visit COFT plots. Agents and farmers also share observed wheat variety strengths and weaknesses with other area farmers. During these visits, agents and farmers discuss other crop, pest, and farm systems management issues. In this way, word-of-mouth recommendation—that is trusted—spreads the adoption of cropping systems and new, high-yielding varieties.

The number of wheat growers participating in the 2011-2012 COFT trial will increase significantly. According to Johnson, the program's expansion is due to the significant potential of two new high-performing hard red varieties—Byrd and Brawl CL—that were released in 2011 and have the potential to significantly increase yields across the state. Golden Plains Area Extension agent Ron Meyer says expansion is also a result of more wheat producers requesting COFT participation.

"We find in Extension that when you work with people who are the early adopters, their neighbors really do pay attention to what they do. You can make a big impact with a few because their neighbors learn from them."

– Bruce Bosley
Cropping Systems and Natural Resources Agent
Logan County

"COFT gives us hands-on, real time exposure to the varieties early in the process. This means we can make verifiable decisions sooner than if we didn't participate."

– Kent Kalcevic
COFT participant and wheat producer

County & Area Partners

Logan & Morgan County Extension
Bruce Bosley, Cropping Systems & Natural Resources Agent

Golden Plains Area Extension
Ron Meyer, Agronomy Agent
Alan Helm, Weed Science Agent

Southeast Area Extension—Prowers County
Wilma Trujillo, Area Agronomy Agent

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Sharing the difference CSU Extension makes in people's lives and their communities.

Making sense of production strategies

The Conservation Reserve Program in Colorado has encouraged farmers to take marginal agricultural land out of production. Expiring contracts mean farmers must consider future land use options. Extension educational workshops connect them to needed information.

Situation

Contracts on over two million Colorado farmland acres taken out of production and put into the Conservation Reserve Program (CRP) will expire by 2013. Established under the USDA-Farm Service Agency in 1985, CRP offers farmers long-term rental payments in exchange for removing highly erodible and marginal farmland from production. Farmers have converted land to grassland to control erosion, protect water quality and provide grazing and wildlife habitat. Returning CRP lands to cropping is just one of several agricultural production strategies available.

Extension's Response

Beginning in 2009, Colorado State University Extension agents and specialists—working across Eastern Colorado—created a regional CRP workshop. The team piloted two successful workshops in 2010 before offering a series of five 'CRP Information Meetings' in Yuma, Phillips, Sedgwick, Logan and Cheyenne counties. Meetings occurred in February and March of 2011.

Each workshop was designed to explain the different agricultural options available to producers—cropping, grazing or a combination of both—and the economics behind each choice. Workshops also educated producers who are considering putting acreage back into CRP. During the half-day workshops, the Extension CRP team presented up-to-date, technical information on:

- Best agronomic practices
- Grazing opportunities
- Economic analysis, including a CRP decision-making software
- Weed control
- Range and grass management

In all, 45 producers from across Eastern Colorado attended the five CRP workshops presented in 2011. A total of approximately 52,000 acres were represented at these workshops. Of these, approximately 21,000 acres are held in CRP contracts.



The Bottom Line

- Extension agents and specialists help farmers and ranchers with expiring Conservation Reserve Program contracts learn valuable technical information to make informed decisions about managing their land for the best economic and conservation outcomes.

By the Numbers

- National rank, by acres, for total number of CRP contracts expiring: 4
- Number of Colorado CRP contracts, in acres, expiring in 2011: 346,351
In 2012: 573,060
- County with the largest number of CRP contracts, in acres, expiring in 2012:
Kiowa, 103,584

Results

By attending the CRP workshops, farmers and ranchers with expiring CRP contracts learned valuable technical information that will help them make informed decisions about managing their land for the best economic and conservation outcomes. This was determined through Power Point surveys using 'clicker' technology so agents could electronically collect participant responses. The following results were tallied together across all five locations (n=45 respondents).

Survey Questions and Responses:

1. Was this program of benefit to you and your operation?
 - 99 percent of respondents said yes.
2. Will you make a change in your operation as a result of this program?
 - 51 percent of respondents indicated they will make a change as a result of the information presented. Respondents who reported they will not make a change may have learned enough information to determine that their current course of action is appropriate.
3. Which session was most beneficial?
 - Respondents indicated that the FSA/NRCS/DOW session was most beneficial to their operation. This session explained the current rules and regulations that are critical to know when re-enrolling CRP acres, or establishing a new CRP contract. All other sessions rated nearly equal in value following the FSA session.
4. How many total acres do you have?
 - Respondent answers totaled 51,650 acres.
5. How many total acres are in CRP?
 - Respondent answers totaled 20,650 CRP acres. Note: only a portion of acreage belong to CRP participants is put into CRP. However, acres currently not enrolled in CRP are also eligible to be nominated.
6. What do you plan to do with your CRP acres?
 - A majority of respondents said they would either maintain their CRP acres as grassland, or were uncertain regarding future plans with these acres. A high number of individuals indicated preference for a dual option of leaving some acres as grassland and cropping the rest.
7. What do you think will be the dollar per acre benefit to your operation as a result of attending this program?

\$ Benefit per acre	% of respondents
\$0 to \$5	26
\$10	60
More than \$10	14

Financial benefits of program	
Average \$ benefit per acre reported for all 5 workshops	\$9.40
Total CRP acres represented at all 5 workshops	20,650
Total \$ benefit for 5 workshops combined	\$194,110
Average \$ in combined attendee benefit per workshop	\$38,882

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Conservation Reserve Program

Through the USDA Farm Service Agency's competitive Conservation Reserve Program, producers can receive annual rental payments to establish long-term (10 to 20 years), resource conserving cover crops on eligible farmland. Rental payments are based on countywide soil productivity and dryland cash equivalents. In some cases, CRP payments have proved to be more cost-effective than cropping, depending on local economic conditions. Due to changes in the U.S. Farm Bill, producers with CRP contracts will have very limited opportunity to re-enroll their land into CRP—a significant change for many farmers who have kept lands in CRP for over two decades.

CRP Workshop Partners

CSU Extension

John Deering, *Northern Region agriculture and business management specialist*

Michael Fisher, *Golden Plains Area livestock agent*

Alan Helm, *Golden Plains Area agent weed scientist*

Casey Matney, *Northern Region range specialist*

Ron Meyer, *Golden Plains Area agronomist*

State & Federal Agencies

Farm Service Agency

Colorado Division of Wildlife

Natural Resources Conservation Service

Natural Resources Conservation Service Resource, Conservation and Development

Yuma Conservation District

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Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

A solid diet of onions

Extension research encouraged Eastern Colorado sheep farmers to adopt a money-saving feed source

Issue

Every year Colorado onion growers must spend time and money disposing of thousands of tons of leftover and rejected cull onions because they easily spread disease and ruin the soil. But to Tom McBride, an Adams County Extension livestock agent, cull onions were a decent source of feed. They are 90 percent water and contain nine to 12 percent protein. Since Colorado onion growers will give away culls for free, he figured sheep farmers might be able to significantly reduce their feed expenses by using the leftover onions. Widespread adoption of this practice demanded reliable, research-backed data to ensure animal health.

Extension's Response

For over a decade, McBride has conducted several studies to learn what happens when sheep eat an onion-based diet. Onions contain sulfides that cause anemia and previous research has shown that cattle become ill and can die if their feed contains more than 20 percent onions. McBride needed to find out if the same rule would apply to sheep.

McBride started feeding onions to his own sheep without issues. As word spread, questions emerged. How would feeding onions to pregnant ewes affect weight gain? Would lambing rates fall if pregnant ewes ate onions throughout gestation? Would onions affect fleece weight and quality?

CSU Extension veterinary specialist Tony Knight worked closely with McBride to answer these questions. They conducted several studies and drew data from two that evaluated the effects of feeding onions in different amounts to ewes and wether lambs.¹ Here are the details of these 2006 studies:

- **Pregnant Ewes Study:** 17 pregnant ewes were fed a diet consisting entirely of onions for the last 102 days of gestation. A control group of 17 ewes were fed a normal diet of alfalfa and grain. Blood samples were taken throughout the trial and analyzed to determine the presence of anemia. Fleece weights, pregnancy rates and lambing percentage were also determined.
- **Market Lamb Study:** 50 wether lambs were fed a diet of cull onions for approximately 60 days before slaughter to see if they would gain enough weight to reach the 130 to 150 pound target. Lambs were randomly split into five groups that were fed a ration of zero, 25, 50, 75, or 100 percent onions. At slaughter, carcasses were evaluated for USDA quality, yield, taste and tenderness.



The Bottom Line

- Extension-led research determined that cull onions are a safe food source for sheep.
- Cull onions, a free and readily available source of feed, have the potential to help sheep farmers across Colorado gain a higher return on their investment.

By the Numbers

- Colorado's national ranking for onion production: 5
- Colorado's national ranking for sheep production: 4
- Reported daily savings when using cull onions: \$16.80

Impact

McBride and Knight have generated results that establish cull onions as a safe alternative to traditional feed rations of hay, alfalfa and corn. Both of these studies produced data that clarifies the unique ability sheep have to process onion sulfides. Overall, findings indicate that ewes can live on a diet of 100 percent onions while lambs headed for slaughter do better on a ration of 50 percent onions.

Specifically, ewes rapidly adapted to eating cull onions. Unlike cattle that can develop a fatal anemia from eating too many onions, sheep presented a mild transitory anemia regardless of how many onions they ate. After a week to ten days, however, red blood cells regenerated and the sheep recovered. They continued eating cull onions without hesitation. Furthermore, ewes did not appear adversely affected when compared to the control ewes, who ate no onions. In fact, onion-fed ewes had comparable body condition scores and fleece weights. Most importantly, there was no significant difference in pregnancy or lambing rates. Therefore, it appears that pregnant ewes can be fed a pure onion diet with minimal detrimental effects.

On the other hand, data indicates that a 100 percent onion diet is not recommended for finishing market lambs. At most, lambs can eat a diet of 25 to 50 percent onions and still reach an acceptable market weight. Lambs fed a diet of 75 and 100 percent onions showed minimum weight during the finishing period. Remarkably, onions fed at any percentage ration did not adversely affect meat quality or flavor.

These results have also helped McBride successfully establish mutually beneficial relationships between sheep farmers and onion growers. Onion growers are eager to give their onions away for free; some even deliver culls directly to sheep farmers during their season of availability (roughly September to March). As a result, onion growers report breaking even on disposal costs.

Sheep farmers, on the other hand, can significantly reduce feed expenses by supplementing rations with onions. Total savings depends on:

- the percent of onions in the daily feed ration,
- cost and type of feed normally given, and
- the duration of onion feeding.

For instance, one farmer reported spending approximately 84 percent less on feed every day, or \$3.20 instead of \$20.00, by feeding his 80-head sheep a mostly onion diet between September and March. Cull onions have the potential to help sheep farmers across Colorado gain a higher return on their investment, especially as the cost of livestock inputs (primarily fuel and feed) continue to rise.

¹ Whether lambs are young, castrated male sheep.

“It’s amazing what Tom Mc Bride has been able to determine about the benefits of feeding onions to sheep. All the cull onions that we have now are going to big sheep feeders. You feel much better that you’re not crushing onions and plowing them under. It has some kind of value to somebody.”

– Bob Sakata
Owner and farmer, Sakata Farms

Learn More

Results and other information about Adams County Extension cull onion research projects are available at: www.colostate.edu/Depts/CoopExt/Adams/ag/sheep_main.htm.

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Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

Integrated strategies lead to better pest management

Advances in communications technology along with weather, pest and disease data collection help farmers shift their pest management activities from suppression to prevention.

Issue

Agricultural producers in Colorado face losses estimated at \$5-\$10 million per crop each year from insect pests, diseases and weeds. Mitigating these losses takes more than pesticides such as insecticides, herbicides and fungicides. Farmers need information and tools that help them handle potential or current pest outbreaks without harming the environment, people or crop values.

Extension's Response

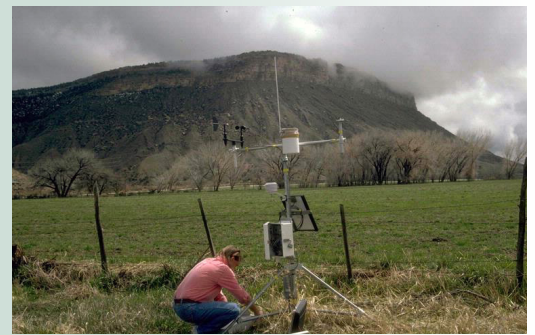
Since 1980, Howard Schwartz has worked with dry bean and onion farmers and crop consultants to minimize pest threats. Schwartz is one of 10 CSU Extension specialists who address pest management issues in the Colorado State University College of Agricultural Sciences department of bioagricultural sciences and pest management.

For decades, Integrated Pest Management (IPM) education focused on pest suppression. Since the late 1990s, advances in technology have generated new tools and practices that emphasize prevention and mitigation as steps prior to costly control measures. Schwartz and his team have contributed to several of these efforts, including:

- Contributing to the development of the Colorado Agricultural Meteorological Network (CoAgMet) which collects weather data from more than 60 irrigated and dryland cropland stations statewide. Local weather data, uploaded to the CoAgMet website, helps growers and crop consultants forecast when and where outbreaks might occur and spread.
- Advancing the adoption of the dry bean and onion IPM Pest Information Platform for Extension and Education ("ipmPIPE"), a national online pest outbreak warning system. PIPEs provide information on the distribution and severity of diseases and insect pests that agricultural experts scout and report.
- Creating disease forecast models and yield loss studies that help dry bean and onion growers make locally-based and risk-rated pest management decisions.

Schwartz also provides comprehensive IPM education and training for CSU Extension agents, farmers and industry stakeholders. His activities include:

- Creating fact sheets, educational videos, diagnostic cards, newsletters and other publications.
- Sharing expertise at field days, demonstrations, workshops and educational meetings.
- Investigating new outbreaks of concern.
- Engaging the Colorado dry bean and onion associations in CSU research and extension. Formal and informal industry check-off programs annually generate \$40,000-\$50,000 for dry bean and onion research and education.



The Bottom Line

- CSU Extension supports Colorado's \$30 million onion and dry bean industries by helping growers adopt the most effective integrated pest management strategies available today.
- CSU Extension estimates that Colorado growers reduce pesticide inputs from improved IPM practices that stress outbreak reduction over absolute control.

By the Numbers

- Estimated annual return of IPM by Colorado onion and dry bean growers: \$4-\$5 million/crop
- Annual cost to maintain one CoAgMet weather station: \$1,000-\$2,000
- Colorado onion crop loss in 2003 due to the iris yellow spot virus outbreak: Nearly \$5 million

Impact

Through Schwartz, CSU Extension has expanded Integrated Pest Management resources and practices that generate more accurate and timely information. Growers can then respond to potential and real pest outbreaks appropriately. Online management tools and resources have improved and increased interstate communications among extension IPM experts and facilitated early warnings about issues and threats that might travel to Colorado from neighboring states.

Schwartz's research and outreach have included:

- Communication networks that help growers and crop advisors forecast outbreaks.
 - Over the last 15 years Schwartz has improved the dissemination and distribution of IPM information. Previous pest management communications focused on sharing outbreak information with growers and crop consultants after the fact. Now a suite of communication tools—CoAgMet, ipmPIPEs, diagnostic cards, videos and more—offers cost-effective ways to monitor, avoid, prevent, and suppress pests.
 - Schwartz notes, “If there is a threat, I can put out an alert on PIPE warning growers, agents and advisors to scout their fields, look for early signs of disease and then appropriately respond.”
- Minimized crop loss.
 - The legume ipmPIPE reports that the project has generated a conservative return of 5 percent, or \$48 million annually since 2006 by reducing legume losses from priority diseases and pests nationwide.
 - Similar economic returns have been provided by the onion ipmPIPE since its inception in 2010.
- Helped Colorado onion growers respond to a new, widespread and damaging pest.
 - In 2003, an outbreak of the iris yellow spot virus (IYSV)—transmitted to onions by thrips (a tiny insect)—cost Colorado onion growers an estimated \$2.5-\$5 million.
 - Schwartz and his team of assistants and students have been responsible for researching and developing resources and strategies to help onion growers, agents and farm advisors practice appropriate and effective pest management.
 - According to Schwartz, pests and diseases affecting dry beans have remained fairly stable but variable in intensity for the last 30 years. The arrival of the yellow spot virus required significant time, effort and collaboration to determine the most effective means of controlling it in onions.
- Minimized environmental impacts.
 - IPM strategies minimize environmental impacts through timely, appropriate and reduced application of pesticides. For example, scouting reports posted online through PIPEs include appropriate prevention, mitigation or control measures that vary according to different stages of plant growth, pest incidence and weather forecasts.

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. Updated June 2012. Written by Carol Busch.

“For the first 15-20 years I wasn’t able to help farmers make a more timely decision to minimize the impact of a pest. Now with these new technologies and PIPEs we’re able to get word out to them within a few days that something is brewing out there so check your fields—and if you do find a problem, here’s something you can do right now to minimize your loss or protect your crop.”

– Howard Schwartz, CSU Extension specialist

A Matter of Economics

For integrated pest management to be effective, growers must combine several strategies: prevention, avoidance, monitoring and suppression. Applying IPM strategies should also make economic sense. Growers may decide that the cost of responding to a pest outbreak will be more than the crop revenue they might see from a response. In collaboration with private industry experts, Schwartz and other CSU Extension specialists have developed decision-making tools that help growers analyze comparative costs.

Learn More

The Colorado Agricultural Meteorological Network:
CoAgMet: <http://climate.colostate.edu/~coagmet/>

USDA ipmPIPEs project:
ipmPIPE: www.ipmpipe.org

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Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

From injury to independence

Extension's AgrAbility program helps farmers and ranchers and their families overcome injury, illness and disability so they can do what they love—farm or ranch.

Issue

Farming and ranching are physically demanding and potentially hazardous professions. Every year more than 500,000 agricultural workers in the U.S. suffer job-related injuries. Many accidents can lead to long-term or permanent disability. Aging and illness can also complicate agricultural work. Routine tasks such as driving a tractor or operating machinery can become difficult, if not impossible.

Extension's Response

In 1991, the U.S. Department of Agriculture (USDA) established the National AgrAbility Project (NAP). AgrAbility helps individuals involved in production agriculture—and their families—overcome illness, injury and disability so they can maintain their independence and succeed.

Directed by CSU Extension specialist Robert J. Fetsch, the Colorado AgrAbility Project (CAP) joined the nationwide network in 1998. Colorado State University Extension human development and family studies faculty partner with Goodwill Industries of Denver to provide no-cost services to Colorado farm and ranch families. These partners offer on-site consultations, technical assistance, educational workshops and referrals of local professional service providers.

Individuals and families seeking assistance meet with an AgrAbility occupational therapist and rehabilitation specialist. These professionals make recommendations for modified and adaptive equipment, machinery, and tools that can simplify, or make possible, home and work tasks. Modifications can be straightforward or complex:

- Rear mount cameras help drivers see behind them and prevent neck strain;
- Lifts help workers with heavy loading and accessing modified vehicles and equipment;
- Shock-absorbing tractor seats reduce back pain.

These solutions are often paired with others, such as prostheses, steering wheel and hand brake controls, foot pedals, specialized hitches, ladders and electronic sensors.

CSU Extension promotes AgrAbility to individuals and families members with disabilities, and the professionals who work with them, through free, half-day workshops offered each winter across the state. Over the years, workshops have focused on disability or injury issues such as arthritis, social security, back injury education, Multiple Sclerosis, how to prevent secondary injury and accessing work spaces.



The Bottom Line

- Farmers, ranchers and their families overcome physical and emotional obstacles and achieve renewed independence and success through AgrAbility.
- AgrAbility is the only program in Colorado that provides comprehensive rehabilitative services and educational resources to agricultural workers.

By the Numbers

- Estimated number of Colorado farmers and ranchers: 59,000
Those with disabilities: 8,000
- Estimated number of Coloradans living on ranches and farms: 116,000
Those with disabilities, illnesses or conditions: 15,000
- Number of AgrAbility direct assistance clients since 1998: 320
- Number of AgrAbility workshop participants: 505

Impact

The Colorado AgrAbility Project has changed the lives of hundreds of Colorado farmers, ranchers and their family members since the program started in 1998. Overall, 320 Colorado farmers, ranchers and family members have received CAP direct assistance. Thirty-seven CSU Extension agents and other professionals have hosted 108 AgrAbility workshops for more than 230 ranch and farm family members and more than 275 professionals.

In particular, CAP direct assistance has improved the work performance of injured, disabled and aging farmers, ranchers and their family members. Consultations and educational workshops have simultaneously reduced the potential for a secondary injury or illness through awareness and improved working conditions. Most importantly, CAP has helped individuals regain their independence at work, home and in their community. Here are a few highlights:

- Rob Proctor continues to farm after losing all four fingers and thumb on his right hand in a forage harvester cleaning accident. AgrAbility helped him modify his farm equipment with foot pedals and larger buttons and partnered with the Division of Vocational Rehabilitation (DVR) to make two custom prostheses that allow Rob to grab and use tools and accomplish other self-sufficient tasks such as buttoning his shirt and writing.
- Multiple Sclerosis kept farmer Bert Nesselhuf from supervising his 350-acre farm until AgrAbility and DVR retrofitted an all-terrain vehicle, a Kawasaki Mule, to accommodate his wheelchair.
- Rashell Fritzler was a busy farm wife until a motor vehicle accident left her paralyzed and unable to perform essential tasks. AgrAbility and DVR modified her van and home office. She can now drive her daughter to school and herself to appointments, and work at home.

Immediate and follow-up survey results from CSU Extension AgrAbility workshops confirms CAP's ability to help farmers and ranchers improve their lives through education and resources. Since 1998, 201 farmers and ranchers completed surveys immediately after participating in a 3-hour workshop. CSU Extension sent these individuals follow-up surveys three to 28 weeks following workshop participation. 180 farmers and ranchers completed follow-up surveys which indicate that CAP gives participants hope and enhances the quality of their lives. Responses show the following outcomes:

Immediate	Follow-up	Outcomes
100 percent	93 percent	Reported increased knowledge
99 percent	94 percent	Reported increased satisfaction levels with AgrAbility
100 percent	98 percent	Want their tax dollars to continue supporting AgrAbility
98 percent	-	Plan to use the information
-	89 percent	Reported improved attitude/outlook
-	83 percent	Reported doing something to improve their lives

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. Updated June 2012. Written by Carol Busch.

“AgrAbility provided people to talk to when I was depressed, and reminded me that there are people worse off than me. Colorado AgrAbility does an awful lot of good by just listening to people talk.”

– Gail Claussen
Rancher, Yoder, Colorado

“The engineering ideas were really spectacular. They have unique designs you would never think of.”

– Don Lumbardy
Farmer, Whitewater, Colorado

Learn More

The Colorado AgrAbility Project serves all Colorado ranching and farming families. Individuals do not need to attend a workshop to receive assistance. Program details, success stories and winter workshop schedules are listed on the Colorado AgrAbility website: www.agrability.cahs.colostate.edu.

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Impact

Colorado State University
Extension

Sharing the difference CSU Extension makes in people's lives and their communities.

Exploring the science of food production

Elementary school students discover the science behind growing food through a successful Eastern Colorado agricultural education program.

Issue

Colorado's top five food producing counties, all located in Northeast Colorado, annually generate nearly \$3 billion in agricultural revenue—almost half of the state's \$6 billion total. Ironically, many young people living in these agricultural-rich areas often think food comes from the store rather than a farm, much like their counterparts in more urban areas. Schools provide a perfect forum for teaching about agriculture and the science behind food production. However, science lessons rarely focus on agriculture, and teachers don't always have the time, resources or knowledge to help engage students in hands-on, agricultural science-based learning.

Extension's Response

In 2010, Colorado State University Extension agents and specialists from across Eastern Colorado created *AgFest*, an annual, one-day traveling agricultural science education event. *AgFest* helps fifth and sixth grade students explore science, technology, engineering and math (STEM) through hands-on educational workshops that supplement their school curriculum.¹ The event currently takes place in communities across Eastern Colorado.

In spring 2011, approximately 1,200 students from over 20 schools attended one of five *AgFest* events held at fairgrounds and community centers. During this year's *AgFest*—in Brush, Lamar, Seibert and Sterling—students spent the day rotating through 10 activity stations in groups of 20 to 30. Stations focused on a different science-based learning objective related to agriculture:

- Microbes and bacteria
- Embryology
- Bee keeping and pollination
- Biotechnology and plant science
- Ruminant digestion
- Renewable energy and conservation
- Farm and tractor physics
- Rangeland ecology
- Groundwater conservation
- Colorado agricultural diversity

Stations also featured hands-on learning activities that made challenging science concepts easier to grasp. Extension agents and specialists, along with a Colorado Department of Agriculture representative, led students through activities and lessons designed to supplement classroom curriculum. For example, at the 'farm and tractor physics' station, students experimented with pulleys and levers to learn about lifting loads and multiplying force. Students were also introduced to a cow's four-chambered stomach, good versus bad bacteria, baby chick embryos, how a press can turn oil seed into fuel, plant science, and a variety of food products grown in Colorado.



The Bottom Line

- *AgFest* enhances science education through standards-based activities that raise student awareness about food production and agriculture.
- *AgFest* complements classroom learning and provides teachers an opportunity to increase their students' understanding of science concepts.

Agricultural Literacy

AgFest is one of several Colorado programs designed to raise student awareness about the link between people, crops, and livestock. Colorado State University's College of Agricultural Sciences developed Ag Adventure to explain the source of their food and fiber through hands-on exhibits. Learn more at www.agsci.colostate.edu/news/agfam_spring11/agfamily_spring2011_www.pdf. Increasing agricultural literacy is the mission of The Colorado Foundation for Agriculture. Learn more at www.growingyourfuture.com.

Impact

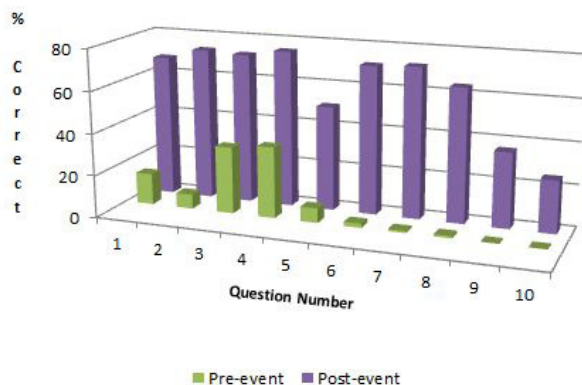
In its second year, *AgFest* continues to develop a scientific understanding of food production among the students who attend the one-day event. Pre- and post-survey results show that students greatly increased their understanding of scientific and agricultural concepts. The greatest knowledge gains were related to entomology, microbes, rangeland and plants.

AgFest surveys also provided space for students to write down and sketch the most interesting thing they learned. Overwhelmingly, students provided detailed descriptions of the parts of an embryo, levers and pulleys, 'gross' germs, and the 'amazing' four-chambered cow stomach. Most students were enthusiastic about *AgFest* and expressed a desire to return because the learning was so much fun.

Backed by 4-H STEM curriculum, Extension agents and specialists provide the resources and expertise of agricultural science-based activities that many teachers cannot offer in their classrooms. As *AgFest* evolves, event organizers hope to further develop station activities to give students even more engaging hands-on learning opportunities that develop their understanding of the agricultural, natural, physical, and life sciences while increasing their awareness of food production.

From the inaugural *AgFest* event in 2010 to its second year in 2011, student participation increased by 400 percent.

Student knowledge	Pre-event	Post -event
1 Embryology	15	68
2 Rangeland	7	73
3 Power and tools	32	72
4 Digestion	34	75
5 Energy	7	50
6 Microbes	2	71
7 Entomology - bees	1	72
8 Plants	1	64
9 Colorado agriculture	0	36
10 Water	0	25



¹ *Science, Technology, Math & Engineering (STEM) combines the strengths of 4-H programming, non-formal experiential-based delivery modes with strong youth/adult partnerships to address content as defined by the National Education Science Standards and practice STEM abilities in order to prepare our youth to compete in the 21st century workplace.*

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. Updated June 2012. Written by Carol Busch.

“Thank you for teaching us about everyday things. The embryology, honey bee, and simple machines were my favorite stations. I hope that you keep this going so other kids can learn and have fun.”

– 5th grade student from Holly, Colorado

Learn More

<http://goldenplains.colostate.edu/AgFest>

AgFest Contributors

The event was made possible by contributions from Koberstein Farms, Monsanto, Pioneer Hybrids, Colorado Wheat Administrative Committee, Colorado Corn, Western Dairy Association and High Plains Bank.

County Partners

AgFest was organized and delivered by Extension agents, specialists and program associates from the following counties:

Bent County	Morgan County
Cheyenne County	Otero County
Crowley County	Phillips County
Kiowa County	Prowers County
Kit Carson County	Sedgwick County
Lincoln County	Washington County
Logan County	Yuma County

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Sharing the difference CSU Extension makes in people's lives and their communities.

Making sense of production strategies

The Conservation Reserve Program in Colorado has encouraged farmers to take marginal agricultural land out of production. Expiring contracts mean farmers must consider future land use options. Extension educational workshops connect them to needed information.

Situation

Contracts on over two million Colorado farmland acres taken out of production and put into the Conservation Reserve Program (CRP) will expire by 2013. Established under the USDA-Farm Service Agency in 1985, CRP offers farmers long-term rental payments in exchange for removing highly erodible and marginal farmland from production. Farmers have converted land to grassland to control erosion, protect water quality and provide grazing and wildlife habitat. Returning CRP lands to cropping is just one of several agricultural production strategies available.

Extension's Response

Beginning in 2009, Colorado State University Extension agents and specialists—working across Eastern Colorado—created a regional CRP workshop. The team piloted two successful workshops in 2010 before offering a series of five 'CRP Information Meetings' in Yuma, Phillips, Sedgwick, Logan and Cheyenne counties. Meetings occurred in February and March of 2011.

Each workshop was designed to explain the different agricultural options available to producers—cropping, grazing or a combination of both—and the economics behind each choice. Workshops also educated producers who are considering putting acreage back into CRP. During the half-day workshops, the Extension CRP team presented up-to-date, technical information on:

- Best agronomic practices
- Grazing opportunities
- Economic analysis, including a CRP decision-making software
- Weed control
- Range and grass management

In all, 45 producers from across Eastern Colorado attended the five CRP workshops presented in 2011. A total of approximately 52,000 acres were represented at these workshops. Of these, approximately 21,000 acres are held in CRP contracts.



The Bottom Line

- Extension agents and specialists help farmers and ranchers with expiring Conservation Reserve Program contracts learn valuable technical information to make informed decisions about managing their land for the best economic and conservation outcomes.

By the Numbers

- National rank, by acres, for total number of CRP contracts expiring: 4
- Number of Colorado CRP contracts, in acres, expiring in 2011: 346,351
In 2012: 573,060
- County with the largest number of CRP contracts, in acres, expiring in 2012: Kiowa, 103,584

Results

By attending the CRP workshops, farmers and ranchers with expiring CRP contracts learned valuable technical information that will help them make informed decisions about managing their land for the best economic and conservation outcomes. This was determined through Power Point surveys using 'clicker' technology so agents could electronically collect participant responses. The following results were tallied together across all five locations (n=45 respondents).

Survey Questions and Responses:

1. Was this program of benefit to you and your operation?
 - 99 percent of respondents said yes.
2. Will you make a change in your operation as a result of this program?
 - 51 percent of respondents indicated they will make a change as a result of the information presented. Respondents who reported they will not make a change may have learned enough information to determine that their current course of action is appropriate.
3. Which session was most beneficial?
 - Respondents indicated that the FSA/NRCS/DOW session was most beneficial to their operation. This session explained the current rules and regulations that are critical to know when re-enrolling CRP acres, or establishing a new CRP contract. All other sessions rated nearly equal in value following the FSA session.
4. How many total acres do you have?
 - Respondent answers totaled 51,650 acres.
5. How many total acres are in CRP?
 - Respondent answers totaled 20,650 CRP acres. Note: only a portion of acreage belong to CRP participants is put into CRP. However, acres currently not enrolled in CRP are also eligible to be nominated.
6. What do you plan to do with your CRP acres?
 - A majority of respondents said they would either maintain their CRP acres as grassland, or were uncertain regarding future plans with these acres. A high number of individuals indicated preference for a dual option of leaving some acres as grassland and cropping the rest.
7. What do you think will be the dollar per acre benefit to your operation as a result of attending this program?

\$ Benefit per acre	% of respondents
\$0 to \$5	26
\$10	60
More than \$10	14

Financial benefits of program	
Average \$ benefit per acre reported for all 5 workshops	\$9.40
Total CRP acres represented at all 5 workshops	20,650
Total \$ benefit for 5 workshops combined	\$194,110
Average \$ in combined attendee benefit per workshop	\$38,882

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. Updated June 2012. Written by Carol Busch.

Conservation Reserve Program

Through the USDA Farm Service Agency's competitive Conservation Reserve Program, producers can receive annual rental payments to establish long-term (10 to 20 years), resource conserving cover crops on eligible farmland. Rental payments are based on countywide soil productivity and dryland cash equivalents. In some cases, CRP payments have proved to be more cost-effective than cropping, depending on local economic conditions. Due to changes in the U.S. Farm Bill, producers with CRP contracts will have very limited opportunity to re-enroll their land into CRP—a significant change for many farmers who have kept lands in CRP for over two decades.

CRP Workshop Partners

CSU Extension

John Deering, *Northern Region agriculture and business management specialist*

Michael Fisher, *Golden Plains Area livestock agent*

Alan Helm, *Golden Plains Area agent weed scientist*

Casey Matney, *Northern Region range specialist*

Ron Meyer, *Golden Plains Area agronomist*

State & Federal Agencies

Farm Service Agency

Colorado Division of Wildlife

Natural Resources Conservation Service

Natural Resources Conservation Service Resource, Conservation and Development

Yuma Conservation District

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Sharing the difference CSU Extension makes in people's lives and their communities.

Small acreage, big know-how

Small acreage landowners learn to manage natural resources and raise animals through strategic educational programming.

Situation

In recent decades large tracts of farm and ranch lands along the Front Range of the Rockies have been subdivided into small acreages. Often, land is purchased by people seeking a lifestyle change. Many small acreage owners—unlike their agricultural predecessors—may have never raised animals or managed land. These new landowners increasingly need guidance on diverse management topics to prevent unintentionally impacting soils, water, plants, animals and other natural resources.

Extension's Response

Building on the success of past programs from Colorado State University Extension, in 2009 Extension and the USDA Natural Resources Conservation Service (NRCS) partnered to create a joint field position to address natural resource goals for the Front Range: educate small acreage owners; provide on-the-ground conservation assistance; and, support other small acreage conservation field staff. Jennifer Cook was hired as the first CSU Extension/NRCS Small Acreage Management Coordinator.

To ascertain landowners' educational needs and learning preferences, Cook conducted a survey at fall 2009 tree seedling sales in Larimer, Weld, Boulder, Adams, Douglas and Elbert counties. She learned that small acreage owners prefer e-newsletters, online courses, a dedicated small acreage website, workshops and conferences. Cook then established the following initiatives:

- Developing and launching a Small Acreage Management (SAM) website that features information, links, images and short educational videos: www.ext.colostate.edu/sam.
- Distributing a quarterly e-mail newsletter that features seasonal SAM articles written by Extension agents, conservation professionals, and small acreage landowners from around the state. More than 2,500 landowners and conservation professionals now subscribe.
- Coordinating free, hour-long SAM webinars presented by CSU professors, Extension staff and other experts. Webinars are recorded and available for instant viewing.
- Producing short online educational videos on topics such as creating wildfire defensible space, running irrigation pumps on solar energy and pasture management.
- Organizing and presenting more than 20 small acreage workshops, often in collaboration with other Extension staff, NRCS and conservation districts from across Colorado.
- One-on-one landowner field visits that address more complicated needs and concerns.



The Bottom Line

- Small acreage owners are increasing their knowledge to sustainably manage land and animals as a result of targeted, CSU Extension communications and programming.

By the Numbers

- According to the National Agriculture Statistics Service's 2007 Census of Agriculture, small farms account for about 48 percent of total farm and ranchland in the US.
- Small acreage landowners in Colorado own two to 100 acres and may be lifestyle farmers who work outside the home, retired farmers, or operators of a small farm or ranch.

Results

CSU Extension and NRCS efforts have increased access to SAM information by developing the kind of communications and programs that small acreage landowners want. As a result, owners have increased their knowledge about practices that will help them build healthy soils, properly manage well and septic systems, sustainably manage livestock, crops and pastures, and monitor and control weeds.

In December 2010, CSU Extension measured some of these gains by randomly surveying 450 recipients of the Front Range Sustainable Small Acreage e-newsletter. 64 surveys were returned (14 percent response rate).

- 91 percent reported being satisfied or very satisfied with the newsletter.
- 86 percent indicated the newsletter has increased their knowledge of managing small acreage.
- 78 percent said they read the majority of articles in each issue.
- 44 percent reported changing one or more of their management practices as a result of information learned in the newsletter.
- The most reported changes to management practices included monitoring and controlling weeds, and rotational pasture grazing.
- Several respondents report using the newsletter to help them plan for managing their small acreage in the future.

Through outreach and educational programs, Cook has also broadened the scope of CSU Extension's expertise and supported the success of other land management professionals. She has developed and expanded partnerships among cooperating agencies and works closely with other state Extension and NRCS field staff to meet landowner needs.

Following a presentation Cook gave at a Teller-Park County small acreage workshop, Leon Kott of NRCS commented:

"I appreciated it because the same information [Jennifer] provided are the things that I have to provide to people. Plus anyone there who follows up with me will be grounded in the SAM principles, making my job easier."

Cook hopes that landowners will continue to improve their skills and knowledge in the years to come so that:

- With the proper education, tools, and best management practices small acreage managers will become better stewards of their property.
- Animals, livestock and wildlife are managed in a sustainable way.
- Landowners are building healthy soils and reducing erosion on their properties.
- Water quality and quantity are protected in wells, local streams, and other water bodies.

Cook's successful efforts to educate small acreage owners and support CSU Extension and NRCS staff and other conservation partners has led CSU Extension and NRCS to create a second SAM coordinator position that will serve Western Slope counties by late 2011.

"I just wanted to thank you on behalf of our Fremont County producers. I have been sending out your newsletter to all of my producer contacts and our office has received great feedback!"

– Melanie Scavarda, Fremont Conservation District

Learn More

Download newsletters, replay webinars, view educational videos and read about small acreage management at:

www.ext.colostate.edu/sam



With offices in nearly every county in the United States, NRCS works with landowners and communities to improve our soil, water, air, plants, wildlife, and energy use.

www.nrcs.usda.gov/wps/portal/nrcs/home



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Sharing the difference CSU Extension makes in people's lives and their communities.

From paddock to pasture

New and potential horse owners learn comprehensive horse care from CSU veterinary and animal sciences experts during new equine field day.

Situation

Many new horse owners lack the knowledge they need to properly pasture, shelter, feed and care for their animals. Horse owners frequently call or visit their local Colorado State University Extension office for information on poisonous plants, proper nutrition and pasture improvements. In Arapahoe County, these inquiries became a regular occurrence.

Extension's Response

Dale Edwards, agriculture and natural resource agent and director of CSU Extension in Arapahoe County, realized he needed an efficient and effective way to provide owners with comprehensive horse care information. In the fall of 2010, Edwards began developing 'Your Horse and You—An Equine Field Day' with Ragan Adams, Colorado State University Veterinary Extension coordinator. The program's purpose was to educate potential and new horse owners in Arapahoe County and surrounding areas about a broad range of important equine care issues.

Adams recruited Extension specialists, equine researchers, and veterinarians from the CSU departments of clinical sciences and animal science, as well as a veterinarian from the Colorado Department of Agriculture, to present these issues at the one-day workshop. Presenters and topics included:

- Tiare Santistevan, MS
 - o Estimating the annual cost of your new horse
 - o Fencing, structures and water tanks
- Tony Knight, DVM
 - o Pastures and poisonous plants
- Brett Kirch, DVM
 - o Basic equine nutrition: range, dry lot or intermittent pasture
- Ann Davidson Sellers, DVM
 - o Dental care, hoof care, vaccinations and parasite control
 - o Assessing horse health
- Carl Heckendorf, DVM, from the Colorado Department of Agriculture
 - o Equine chip identification

'Your Horse and You—An Equine Field Day' occurred on March 19, 2011, at the Arapahoe County Fairgrounds. In addition to seven breakout sessions, the field day included hands-on demonstrations on assessing horse health, assembling and using an equine emergency kit and performing basic health care techniques, such as administering oral paste and wrapping legs.

A total of 79 Arapahoe and adjacent Front Range county residents participated in the field day. Of these, 25 were 4-H and Pony Club youth.



The Bottom Line

- Arapahoe County Extension and CSU Veterinary Extension partnered to bring research-based horse care information to owners who lacked necessary knowledge and awareness.
- 'Your Horse and You' field day helped new and potential horse owners learn to make important changes to their horse care practices.

Results

To assess the effectiveness of the inaugural 'Your Horse and You' field day, Edwards asked participants to fill out retrospective pre/post evaluations.

Results from 49 completed surveys show that 'Your Horse and You' successfully increased participant knowledge about all seven horse care topics presented, and generated significant interest in making changes to current horse care practices. In fact, as a result of classroom presentations and hands-on demonstrations, 100 percent of participants say they plan to use the information they learned.

Participants reported planning to make the following improvements and changes based on what they learned during the field day:

- better pasture management
- checking property for poisonous plants
- vaccinating and microchipping horses
- updating deworming program
- weed mitigation on property
- taking vitals on a regular basis
- improving 4-H record book financial summaries
- checking property for dangerous fencing
- moving water tanks to a better location

The following chart shows the percentage of respondents, by age category, who increased their knowledge in the subject area indicated.

Age Group:	8-18	19-49	50+	All
I know how to estimate the annual cost of my horse(s).	68%	75%	50%	67%
I know what I need for fencing, structures and water tanks.	76%	81%	50%	73%
I know what a high risk pasture looks like.	72%	81%	88%	78%
I know how to identify poisonous plants in my pasture.	88%	94%	88%	90%
I know what the basic equine nutritional requirements are for horses on the range, in a dry lot and intermittent pasture.	64%	75%	88%	71%
I know how to deal with dental care, hoof care and vaccination and parasite control.	84%	75%	88%	82%
I know the importance of equine identification.	56%	81%	75%	67%
I know how to go about assessing my horse's health.	60%	69%	100%	69%

"I don't have horses yet, but plan to make sure pasture is in good shape first and do a lot more general research."

– Equine Field Day participant

"The number of individuals who own horses is substantial within the urban corridor."

– Dale Edwards

Arapahoe County Extension director and agent

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Sharing the difference CSU Extension makes in people's lives and their communities.

From agricultural audits to clean energy curriculum

A network of clean and renewable energy initiatives is helping individuals and communities learn about and adopt money-saving energy solutions.

Situation

Colorado has one of the country's most aggressive policy targets for renewable energy—by 2020, 30 percent of the electricity generated by Colorado's largest utilities must come from renewable sources. This mandate seeks to create jobs, make communities stronger and reduce dependence on foreign oil. As a result, individuals, businesses and municipalities have increased their demand for unbiased and reliable information on energy efficiency and renewable energy.

Extension's Response

Colorado State University Extension first responded to this need in late 2008 by addressing consumer knowledge gaps in clean and renewable energy. A statewide team of Extension agents researched and wrote fact sheets on solar, wind, and home energy efficiency. They also organized and presented regional workshops on these topics and more.

In spring 2010, CSU Extension hired a clean energy specialist, Cary Weiner, to lead and further develop educational resources and learning opportunities for youth and adults. Extension was also awarded a grant from the Colorado Energy Office (formerly known as the Governor's Energy Office) to hire community energy coordinators for Gilpin and Clear Creek counties, Custer and Fremont counties, the Golden Plains Area, and the San Luis Valley. Coordinators formed local advisory boards to collaboratively develop, approve and implement diverse regional energy strategies.

In 2011, Weiner led CSU Extension's clean and renewable energy program team. Major accomplishments include:

- Creation of a Colorado Energy Office grant-funded, clean energy curriculum for middle and high school students in rural and underserved Colorado communities. The curriculum is aligned with state science standards and was developed with teacher input and 4-H STEM oversight. Seventy teachers across the state received the curriculum at no-cost trainings.
- Development of a Colorado Energy Master program to certify volunteers who will help individuals and small businesses make wise energy decisions by teaching the costs and benefits of various energy options. The program launched in four counties.
- Establishing the Center for Agricultural Energy, a pioneering statewide effort to empower agricultural producers in Colorado to make environmentally and financially sound energy decisions. The center is a partnership between CSU Extension and the College of Engineering. Affiliated faculty completed eight agricultural energy audits, kicked-off a series of workshops and conduct ongoing audits, outreach, and research on biofuels, anaerobic digestion, small hydropower and the water-energy nexus.



The Bottom Line

- CSU Extension is the state's leading resource for unbiased consumer, agricultural, and community energy information.
- CSU Extension is training future energy leaders on the science of energy and energy-related careers.
- CSU Extension is best suited to helping consumers discover whether specific clean energy technologies are an affordable and viable choice.
- CSU Extension is at the forefront of research on agricultural energy use and generation.

Results

Through workshops, clean energy expos and a monthly newsletter, thousands of Coloradans have received unbiased clean and renewable energy information.

CESIT and Weiner's comprehensive group of clean and renewable energy programs provides resources to a broad cross-section of the state's residents, businesses and communities. The design and development of these programs has positioned CSU Extension as a valued partner with nearly 30 statewide agencies and businesses. Together, partners win grants and awards, put on special projects and share the knowledge of the community education coordinators.

For example, in 2010 Weiner contributed his expertise to a team of family and consumer sciences agents who integrated residential energy efficiency education into trainings for human service agencies across the state. The National Extension Association of Family and Consumer Sciences awarded the team a regional and national award for 'Extension Housing Outreach.'

CSU Extension has laid the foundation for great work to come. Moving forward, Weiner and his team, which includes CESIT members and CECs, will begin assessing potential benefits as new clean energy initiatives launch across the state. Projected impacts include:

- Helping producers reduce agricultural energy use by adopting energy saving strategies.
 - Energy costs for common agricultural operations in the western U.S. can range from a little more than 30 percent of total operating costs (sugar beets) to more than 50 percent of total operating costs (wheat). Even a five percent decrease in energy use could save producers thousands of dollars annually.
- Increasing producer bottom lines and generating energy independence with on-farm biofuel production.
 - Extension is researching promising oilseed varieties that could offer producers across Eastern Colorado an limited irrigation and dryland farming alternative.
 - Extension has partnered with farmers to improve on-farm biofuel production. Pilot projects are generating biodiesel in Stratton and biofuel-diesel in Rocky Ford , as well as high protein meal, a byproduct that is sold for use as livestock feed.
- Helping thousands of Colorado consumers, including low-income individuals, save money by providing reliable, fact-based information and hands-on activities on:
 - Upgrading residential energy efficiency;
 - Tapping into rebates and incentives to purchase clean energy technologies.
- Generating economic opportunities through regional energy strategic plans developed by community energy coordinators with guidance from elected officials, utilities, energy contractors and other stakeholders.
- Educating future leaders. Students can play a more informed role in future decision-making regarding clean and renewable energy policy as well as be exposed to career opportunities by learning the science behind energy technologies.

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. Updated June 2012. Written by Carol Busch.

Recharge Colorado

CSU Extension partners with the Governor's Energy Office to enhance and expand clean and renewable energy programs statewide. Community Energy Coordinators and the development of a clean energy curriculum for Colorado middle and high school students were made possible by GEO funding. Created in 1977, the GEO works to create jobs, spur innovation, preserve Colorado's natural environment, and ensure low cost, safe, and reliable generation, delivery, and consumption of energy. Learn more at www.rechargecolorado.com.

Learn More

Extension's clean and renewable energy website offers easy-access to energy questions, outlines current program initiatives, and offers guidance on energy issues and solutions: www.ext.colostate.edu/energy/index.html.

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Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

Management, networking and grants energize rural development

Extension creates new opportunities for business, government and people throughout Dolores County.

Issue

Less than 2,100 people live in Southwest Colorado's Dolores County. Its two main towns, Dove Creek and Rico, are separated by miles of mountains, mesas and small canyons. For decades, potable water, social services, business opportunities and other community amenities were few to non-existent. Dolores County needed management expertise, a network of partners and a steady funding stream to jump-start improvements.

Extension's Response

Dolores County Extension county director, Dan Fernandez, addressed this need when he joined Colorado State University Extension in 1990. The county had been working to bring potable water to its rural residents since the 1970s.

Fernandez developed strategic county relationships with the Department of Local Affairs (DOLA), the Southwest Water Conservancy District, and the Montezuma Water Company to develop a rural water project. He applied for a DOLA grant and received over \$200,000 in state and federal funding to construct two 300,000-gallon storage tanks. He then led a three year campaign to complete the project, which resulted in 66 miles of waterlines that serve almost 200 households. According to Fernandez, the success of the water project created a demand for county-wide improvements and prepared Extension for involvement in long term, community development programing.

Fernandez's position is unique compared to most CSU Extension county directors. In addition to providing Extension programming, he also fills gaps in county government by assuming certain responsibilities that county managers and planners typically handle, such as grant writing and economic development. For two decades, Dolores County Extension, through Fernandez, has provided technical assistance and oversight to over 10 boards and agencies.

Since 1990, Fernandez has also written over 140 grants to establish and enhance programs, services and business opportunities throughout the county. Significant community development projects include:

- Dolores County Fairgrounds construction and expansion: 1994-97
- Dove's Nest Early Care and Education Center, the first licensed facility of its kind serving the county: Established 1996, grants ongoing
- DCTV, a public access channel network that provides 4-H evening news, local weather, and educational programming: Established 1996, grants and sponsorships ongoing
- Community Health Clinic construction and improvements: 1998 to present
- Dick & Adele Weber Business Park: Established 2003, grants ongoing



The Bottom Line

- Dolores County Extension has improved the lives of county residents through millions of dollars in grants that support critical community services and programs.
- Dolores County Extension's management and networking expertise created long term community development.

By the Numbers

Dolores County Extension achievements since 1990:

- Number of grants written: 141
- Number of grants awarded: 116
- Amount of funding awarded: \$4,238,413
- Total grant package value: \$5,841,329
- Estimated current value: \$11,582,731

Impact

Since 1990, Dolores County Extension has generated over \$4 million in direct grant funding to support local services, programs, infrastructure and people. These projects have created new opportunities for economic development and improved residents' quality of life. Dolores County Extension also provided significant coordination, management and advisory expertise to ensure grant-funded projects succeeded. As a result, Extension helped generate a wealth of community, environmental and economic impacts, including:

Safe and reliable drinking water

- The rural water project brought potable water into people's homes and increased rural western Dolores County land values from \$100 per acre to \$700 in fourteen years.
- Town of Rico water improvements made town drinking water safe and increased storage capacity three-fold; lot values increased from \$5,000 to \$40,000 in seven years.

Family and individual stability and health

- Dove's Nest Early Care and Education Center allowed both parents to take on full-time jobs and increased the safety and education of children.
- The Dove Creek Community Health Clinic annually sees 1,400 patients, regardless of their ability to pay. It is the medically underserved region's only federally-qualified health center.
- The Senior Center guarantees the county's aging population has access to nutritious meals, safe transportation, and medical care and remains an integral part of the community.

New business opportunities

- The Nonprofit Dolores County Development Corporation established the Dick & Adele Weber Business Park in Dove Creek from 12 acres of donated raw ground. Numerous federal and state rural and economic development grants made the project possible.
- The business park has generated new opportunities for light industry and tourism, including a cement mixing company, a metal salvage operation and an antique tractor display.
- Business anchor San Juan Biodiesel, a 2.5 million gallon oilseed crushing and biodiesel production facility, developed a new dryland cropping rotation for local and regional growers. The business, now closed and for sale, employed 15 people at the height of its operation.

Community connections and a window to the world

- Dolores County Broadcasting Network (DCBN) is a UHF and cable-based public access channel that Dolores County Extension started in 1996. The network now owns one transmitter, manages three, covers Southwest Colorado and Southeast Utah and has a potential viewing audience of 40,000 residents. It broadcasts live and recorded programming via off-air antennae and cable, rebroadcasts a feed of Colorado Public Radio and streams live on the Web.
- Dolores County Extension has acquired over \$230,000 in grants to build a new studio and develop live 4-H evening news programming.
- Live and recorded programming features CSU Extension instructional workshops, church services, music, weather, Web cams, classic movies and more.
- Major contributors include Dolores County, the Southwest TV Translator Association, and Baja Cable.

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. Updated June 2012. Written by Carol Busch.

County Partners

Anschutz Foundation
Bacon Family Foundation
BOCES
Colorado Advanced Technology Institute
Colorado Council of the Arts
Colorado Department of Agriculture
Colorado Department of Transportation
Colorado State University Extension
Colorado State University Extension 4-H Fund
The Colorado Trust
Coutts & Clark Foundation
Daniel's Fund Foundation
Department of Local Affairs
Dolores County
El Pomar Foundation
Farm Services Agency
GOCO
Job Training Partners Act
Montezuma Water Company
Natural Resources Conservation Service
Region 9 Economic Development District
Social Services
Southwest TV Translator Association
Southwest Water Conservation District
State Historical Society
Town of Dove Creek
Town of Rico
USDA Rural Development
USDA San Juan RC&D
US Forest Service
Workforce Investment Act

Learn More

A complete list of grants made possible by Dolores County Extension since 1991 is available at www.extension.colostate.edu/WR/Dolores/grants.pdf.

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Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

Changing lives through family success in Adams County

An innovative family and consumer science grant-funded program is changing lives for the better while becoming a national model for assessing unique populations.

Issue

The construction boom that hit Colorado's Front Range in the late 1990s and early 2000s brought a wave of immigrant laborers and families to Adams County. The influx of newcomers shifted the county's demographics from an older, agricultural population to one that is younger and more culturally diverse. CSU Extension wondered if its programs were meeting the needs of Adams County citizens so it polled residents in 2006. We learned that food safety, health and wellness, financial management, and family and youth development were top community concerns.

Extension's Response

In 2007, Adams County Extension designed a collection of Family and Consumer Science programs to help county residents overcome many of the financial, parenting and relationship obstacles that challenged their lives. *Family Success in Adams County* (FSAC) emerged as a breakthrough effort that the U.S. Department of Health and Human Services awarded with a five-year grant.

Family Success in Adams County features eight free programs that are offered as a series of classes:

- For financial management: *Spend Some, Share Some, Save Some* and *Dollarworks2*
- For parenting: *Make Parenting a Pleasure* and *It's My Child, Too*
- For communication and relationships: *RETHINK Anger Management*, *Within My/Our Reach*, and *LoveU2*

Family Success in Adams County seeks to prove that prevention and intervention can improve the course of family lives. To show this, the FSAC project team evaluates immediate and long-term program outcomes through in-depth surveys taken by participants before and after programs and again at six, 12, 18, and 24 months. Program and follow-up evaluation measures broad concepts (e.g., stress and psychological well-being) as well as program-specific knowledge and skills (e.g., financial planning and management).



The Bottom Line

- FSAC fills a critical education gap by delivering life-changing programs in financial management, parenting and relationships.
- No other entity in Adams County has the resources and expertise to deliver programs of this nature to adults.
- Adams County Extension has become a national leader in demonstrating how family and consumer science programs can change people's lives.

By the Numbers

- 94 percent of participants would refer the program to a friend
- 94 percent of participants say the FSAC program they took was appropriate and useful
- 99 percent of participants say the quality of the instructors work was excellent

Impact

Preliminary data show that FSAC programming is helping participants make profound and successful personal change. They are learning to control spending, handle anger, and become better parents and partners. These outcomes are seen in both immediate (pre and post program) and long-term (follow-up at 6 and 12 months) evaluations. For instance, immediate program outcomes from *Spend Some, Share Some, Save Some* indicate that participants have increased their understanding of financial management concepts, including the role that choice plays in making financial decisions, how to develop strategies to save money, and how to protect personal information, by nearly 21 percent.

In addition to survey data, participant feedback tells how FSAC programs are making a difference and generating overwhelming satisfaction:

- “I have hope for my future, to make more positive changes toward starting a long-term career and for myself to support my girls in a healthy way.”
- “I have learned how to maintain lifestyles and finances so we never become homeless again no matter what happens things will be ok.”
- “I have learned how to be a better parent. Listening is going to help me in the future.”

2011 FSAC Report

The FSAC 2011 Semi-Annual Report is available by request. It highlights immediate and long-term outcomes and explains the different evaluation tools used to measure program success.

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Sharing the difference CSU Extension makes in people's lives and their communities.

Helping residents understand changing forest ecosystems

CSU Extension programs in Gilpin County provide residents and community leaders with the information they need to respond to the widespread effects of the mountain pine beetle epidemic.

Situation

In early 2008, foresters predicted that the mountain pine beetle (MPB) epidemic spreading throughout Colorado might kill up to 90 percent of Gilpin County's lodgepole pine forests. Landowners in this mountainous region of the central Front Range had an urgent need to respond with credible and reliable information. Meanwhile, county decision makers faced growing forest management concerns.

Extension's Response

Irene Shonle, natural resources agent and director for Colorado State University Extension in Gilpin County, has addressed these issues since 2008 by organizing educational programming and outreach, providing technical assistance, and collaborating with regional agencies.

Educational Programs & Outreach

- Providing 27 hands-on workshops, programs and presentations on pine beetle ecology, creating defensible space, fire preparedness and planning, using a chainsaw safely, creating diverse and resilient landscapes and other relevant topics. More than 1,300 area residents have attended programs.
- Answering 1,673 e-mail, phone and walk-in questions about MPB and forest management.

Technical Assistance

- Facilitating a countywide Community Wildfire Protection Plan (CWPP), adopted in 2009.
- Providing improved residential transport and recycling of MPB-affected trees. In 2008, Shonle encouraged county commissioners to purchase a wood chipper that could process logs as short as 4 feet. Previously, a rented chipper could only process logs 12 feet or longer. Chipped wood heats the biomass boiler in the county road and bridge building.
- Coordinating annual tree seedling sale to reforest private land. Landowners purchased 11,660 trees through the Colorado State Forest Service.

Regional Collaboration

- Shonle represents CSU Extension and Gilpin County on the Northern Front Range Mountain Pine Beetle Working Group. Interagency members coordinate MPB mitigation across county lines to ensure consistent messaging and public information, and educate community decision makers.
- Extension agents and other natural resource representatives work together to deliver forest-related workshops and programs in nearby counties such as Jefferson and Boulder.



The Bottom Line

- Gilpin County Extension helped citizens and decision makers understand and responded to widespread tree mortality and related forest management issues caused by the mountain pine beetle epidemic.

By the Numbers

- Estimated acres of Colorado forest lost to MPB epidemic: 4 million
- Forest-related questions answered by Gilpin County Extension from 2008–2011: 1,889
- Number of tree seedlings planted by county citizens from 2008–2011: 13,937
- Number of Gilpin County residents: 5,000

Results

Shonle's responsive leadership, educational programming and forest management recommendations have meant that local residents and government officials were able to make informed decisions and cope with unprecedented forest change. These efforts led to:

Improved Public Understanding & Community Safety

- Gilpin County Extension programs offered research-based, scientific information that explained how and why the epidemic happened, and what to possibly expect. Programs also shared best practices that helped residents reduce the possible threat of fire, mitigate the pine beetle's spread and create diverse and resilient landscapes.
- Program evaluations indicated that more than 50 percent of all attendees intended to use the information they learned to educate home owners associations, participate in CWPP mitigation projects, create defensible space around homes, develop an evacuation plan, volunteer for community MPB management projects, and share information with neighbors and friends.
- Front Range elected officials became more informed about MPB-related community issues, such as hazardous trees, declining property values and the threat of fire.
- By developing a CWPP, county and community stakeholders identified fire hazards and risks facing communities in the Wildland Urban Interface (the area where wildland and human development overlap), and set priorities for mitigating those risks and improving community safety.

Economic Benefits: Cost Savings & Grant Funding

- Landowners helped offset the amount of woody biomass the county had been purchasing to fuel the road and bridge boiler by 75 percent (450 tons). Residents have an incentive to remove dead trees since dead and dying tree drop off at the new wood chipper is free. According to Shonle, this service is providing a quicker payback on the boiler expense. Also, tree removal and chipping may have reduced the spread of MPB.
- Because the county adopted a CWPP, its government and citizens are eligible to apply for and receive funding that targets planned fuels mitigation projects.
 - The CWPP made it possible for Anchor Point, a fire management consultant group, to receive \$250,000 of American Recovery and Reinvestment Act grant funding for high priority tree thinning and fuel break projects on 73 acres of Gilpin County public and private land.
 - The CWPP also enabled the county to acquire a \$48,000 Wildland Urban Interface grant from the Colorado State Forest Service to thin 52 acres of county-owned land and continue implementing the CWPP.

"The seminar was packed with a lot of helpful information about history...the BIG picture and the future. I feel way better informed now and walk over my property with a different view."

– Gilpin County Resident

Learn More

View the Gilpin County CWPP:

www.co.gilpin.co.us/Commissioners/GilpinCWPP.pdf

Program Partners

Boulder County

Boulder County Extension

Colorado State Forest Service

Northern Front Range MPB Working Group

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Sharing the difference CSU Extension makes in people's lives and their communities.

Reducing wildland fire risk in Summit County

Mountain areas throughout Colorado face increased risk of fire following massive tree die-off from a pine beetle epidemic. Extension is helping residents reduce risk through education and outreach.

Situation

Summit County's mountainous communities are surrounded by forested lands that are recovering from a massive pine beetle epidemic. This means that homes, schools, businesses, utilities, and public and emergency services are continuously at risk of fire. Population growth has increased this risk by expanding human development deeper into forested lands.

Extension's Response

In January 2010, Colorado State University Extension in Summit County hired Dan Schroder as director and natural resources agent. Schroder's primary task is representing CSU Extension on the Summit County Wildfire Council (SCWC). This neutral body of 18 cooperating agencies oversees implementation of the county's community Wildfire Protection Plan, which identifies private and public acreage most at risk of fire. The CWPP sets goals for reducing fire risk in 26 designated 'areas of concern' through public education and hazardous fuels reduction projects, such as the thinning or clearing of living or dead, flammable vegetation.

Since early 2010, Schroder, the education liaison of the council, has collaborated with the U.S. Forest Service, Friends of Dillon Ranger District, Colorado State Forest Service, Summit County, local fire protection districts, municipalities, and local businesses to provide outreach and education. More than 10,000 people have received information or participated in Extension-led projects and programs developed by Schroder. These include:

- A county-wide public awareness campaign focusing on forest health, hazardous fuels reduction projects, creating defensible space, evacuation preparedness and planning, and protecting communities.
- Sharing information and resources at farmers markets, annual tree seedling sales and as a guest speaker at local meetings and events.
- Presenting a series of 'Forestry in the Field' workshops located on U.S. Forest Service trails throughout the county.
- Coordinating the county's first-ever hazardous fuels treatment map book.
- Creating community awareness about forest ecosystems through public art.

Schroder also supports the administration of the county-funded 50-50 grant program, which provides matching dollars to qualifying applicants conducting collaborative landscape-level, hazardous fuels treatment projects. The program was established in 2008 under county voter-approved Measure 1A. Grantees have treated a total of 873 acres with approximately \$950,000 in leveraged funds.



From the 2005 Summit County "Living with the Threat of Wildfire" brochure.

The Bottom Line

- Through partnership with the Summit County Wildfire Council, Summit County Extension has become a local leader in organizing and implementing public education initiatives about wildfire mitigation and forest ecology.

By the Numbers

- Percent of lodgepole mortality in northern Summit County: 95
- Summit County land area, in approximate square miles: 600,000
- Percent of private/public land in Summit County: 20/80
- Estimated year round population: 30,000
- Estimated total population during peak seasons: 100,000
- Percent of unoccupied vacation homes: Over 60

Results

Summit County Extension has become a local leader in building community awareness about wildfire mitigation and forest ecology. Through collaborative partnership with Summit County Wildfire Council member organizations, Extension has contributed to the following:

- Since 2009, 41 community partners have completed \$1.3 million in hazardous fuels reduction projects on more than 600 acres through the county's 50-50 matching grant program.

Year	\$	Acres
2009	\$671,408	327.53
2010	\$339,786	105.6
2011	\$337,604	181.6

Divide \$ total in half for county contribution. Average price per acre: \$2,194.

- Heightened community awareness about forest ecosystems and land management through interactive, field-based workshops and community outreach to diverse audiences via farmers' markets, community presentations, public service announcements (broadcast on local cable and radio channels), interpretive signs, and the Summit County wildfire mitigation website: <http://summit.co.us/wildfiremitigation/>.
- The development and production of Summit County's first-ever hazardous fuels treatment map book, a 26-page visual aid and decision-making tool that provides geographical and topographical data relative to fuel treatment location, ownership and acreage size.
 - This resource could help residents in critical treatment areas understand the need to manage their land to create fuel break linkages that can reduce the risk of fire.
- Public art as education
 - Schroder developed and organized a public art project to raise awareness about the mountain pine beetle and its impact on forest ecology. Local and national artists, selected by Facebook vote, decorated carry-on suitcase-sized beetles that were mounted on wooden platforms and displayed with SCWC educational messages throughout Summit County public spaces during Summer 2011.
 - Beetles were auctioned off at the Town of Frisco's 2011 Beetlefest. Proceeds were dedicated to support forest stewardship efforts.
 - The event was a community partnership between Summit County Wildfire Council, Town of Frisco, Town of Breckenridge, Breckenridge Arts District, Summit County Arts Council, Beetle Blockers, and CSU Extension in Summit County.

In 2011, Schroder's efforts in furthering public education and outreach received commendation by Summit County Extension partner Friends of the Dillon Ranger District. The nonprofit awarded Schroder Outreach Educator of the Year. "Friends of Dillon Ranger District couldn't have made the impact we did—212.5 volunteer hours in education alone—without Dan Schroder," says Sarah Slaton, FDRD program manager.

"I'm working on a perception campaign. I'm trying to get people to start thinking about the future forest. I'm empowering people to do what they can do in the places they have the ability, on their own private property in their neighborhoods."

— Dan Schroder
Summit County Extension director
and natural resource agent

"We just keep messaging the fact that the more trees that come down, the safer you are, the safer our community is, and as a side benefit—more stunning views open up."

— Eileen Davis
Council Member—Town of Frisco and SCWC

"Dan is so full of information and is so passionate about helping others truly understand what's going with our forests."

— Sarah Slaton, Program Manager
Friends of Dillon Ranger District



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Sharing the difference CSU Extension makes in people's lives and their communities.

Preserving with confidence

Extension's volunteer Master Food Safety Advisors help consumers extend the usefulness of seasonal and local foods and ensure safe food preservation practices at home.

Situation

Advances in food science and safety mean people can now access a reliable, trusted, and current source of information to successfully preserve foods at home. In recent years, Extension offices around the country have reported increased consumer interest in food preservation education. Without knowing how to properly can, freeze, dry or ferment foods for long-term storage, people put themselves and others at risk of foodborne illness.

Extension's Response

In the late 1970s and early 1980s, land grant university Extension programs around the country began offering Master Food Preserver trainings to increase consumer access to research-based food preservation and safety know-how. Colorado State University Extension has maintained this successful statewide volunteer program for more than 30 years. In 2006, CSU Extension changed the title of the program from 'Master Food Preserver' to 'Master Food Safety Advisor' (MFSA) to emphasize the importance of food safety within food preservation.

For instance, certain preservation techniques passed from generation to generation are no longer safe. Some types of bacteria have developed the ability to grow in lower temperatures and more acidic conditions. To help consumers use the latest best practices for food safety, volunteer advisors:

- Answer food preservation inquiries at county Extension offices
- Provide information at local farmers' markets and fairs
- Conduct presentations and workshops
- Prepare educational displays and write articles for newsletters and newspapers.

In addition, volunteers might teach proper hand washing to pre-schoolers or instruct school-age children on how to safely prepare a snack and store perishable food items.

To become a certified MFSA volunteer, participants take 30 hours of intensive training through a local county Extension office on methods of food preservation and food safety and participate in ongoing training updates. Through lectures, discussion and hands-on demonstrations, volunteers learn how to prevent foodborne illness. They also learn how to safely store food and preserve acidic and low acidic foods, pickle and ferment, make foods, freeze and dehydrate.

Volunteers annually donate a minimum of 40 hours of service. They are active in eight counties throughout Colorado. The largest programs are in Larimer and Routt counties.



The Bottom Line

- Master Food Safety Advisors help consumers adopt and practice the most current, research-based techniques in food preservation and food safety.
- Master Food Safety Advisors help prevent foodborne illness.

By the Numbers

- Number of counties with MFSA volunteers: 8
- Number of MFSA volunteers in Colorado: 54
- Number of volunteers hours contributed in 2011: 2,245
- Estimated value of MFSA volunteer service: \$48,919

Results

The MFSA program ensures that consumer confidence regarding safe food preservation practices remains high. Under the supervision of county Extension Family and Consumer Science (FCS) agents, volunteer advisors are the first line of response to consumer questions about canning, freezing, and storing foods. When volunteers share their knowledge with the community, citizens gain access to the most current research-based practices in food preservation and food safety. The flow of information doesn't stop there. A previous study on consumer confidence related to Washington State University's Master Food Preserver program showed that 80 percent of individuals who received information shared what they learned with at least one or two other people.¹

Volunteer advisors help county Extension agents keep food preservation education relevant to community needs and interests. By tying food preservation classes and workshops to seasonally available and locally grown foods, volunteers help community members support local agriculture while increasing their self-sufficiency. For instance, in Larimer County, experienced volunteers help teach food preservation classes from spring through fall on canning basics, making and preserving salsa, jellies and jams, drying foods, fermenting vegetables, and preparing foods at high altitude.

Master Food Safety Advisors play an invaluable public health role by helping reduce the threat of foodborne illness. For instance, many people want to know how to recognize the presence of botulism, what causes its growth, and how to prevent it from occurring. By helping consumers understand how improper food storage and preservation can lead to food-related illnesses, volunteers bridge an important knowledge gap and reinforce CSU Extension's role in connecting individuals and communities to unbiased, reliable and research-based information.

¹ www.ioe.org/ioe/1987summer/iw2.php - High Consumer Confidence, Hillers and Fox.

County & Area Partners

Boulder County

Chaffee County

Eagle County

Larimer County

Pueblo County

Routt County

Tri River Area

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Sharing the difference CSU Extension makes in people's lives and their communities.

Small acreage landowners learn to improve water use

Irrigation audits help small acreage landowners take steps to improve management of irrigation water while conserving natural resources.

Situation

Colorado's small acreage landowners, new to farming and ranching, tend to overwater their fields and pastures due to aging, incorrectly installed and mismanaged irrigation systems. These often lead to excessive soil saturation and unwanted ponding or runoff. Overwatering can also cause weed infestations and increase mosquito outbreaks. In parts of the Western Slope, including the Grand Valley, excess irrigation also impairs downstream water quality and harms aquatic life by leaching salt and selenium out of the region's alkaline shale soils and into its rivers.

Extension's Response

Colorado State University Extension launched the Small Acreage Irrigation Ambassador program in 2010 in the Grand Valley and surrounding Mesa County. The program identifies the source of irrigation inefficiencies, makes recommendations for improved irrigation management, and helps landowners better understand how plants, water, soil and weather interact.

Denis Reich, CSU Extension Western region water resources specialist, originally created the free service to reduce water waste (the amount of water that is not actually being used by crops), increase crop yields, control weeds and reduce the amount of selenium and salt leached by excess water. After successfully piloting the program two years ago, mosquito outbreaks were also identified as a common symptom of over-irrigation.

In 2011, CSU Extension expanded the program by partnering with the Mesa Conservation District, which received grant funding to hire a dedicated small acreage irrigation ambassador. Grantors included the Colorado Basin Roundtable (a branch of the Colorado Water Conservation Board), Grand River Mosquito Control District, Grand Valley Irrigation Company and Grand Valley Water Users Association. Reich continues to oversee the program.

The program runs April through October. Interested landowners schedule a visit with the ambassador during, or immediately following irrigation. During the audit, the ambassador looks for signs of excessive watering and records soil type, soil moisture, crop health, type of irrigation system, irrigation 'set length' (the amount of time water is applied to a field) and frequency. Within two weeks of the audit, landowners receive a report that details collected data and recommended next steps.

In 2010, Reich conducted 14 irrigation audits. In 2011 year, the ambassador visited 57 small acreage properties; 44 received audits.



The Bottom Line

Helping small acreage landowners on Colorado's Western Slope learn how to improve their irrigation water management practices means they can:

- save time, money and resources;
- grow healthier and more abundant crops and pasture;
- keep mosquito populations in check; and,
- reduce the amount of salt and selenium that overwatering leaches into rivers.

By the Numbers

In 2011

- Total landowner calls: 100
- Total ambassador visits: 57
- Total audits conducted: 44
- Total acres visited: 276.8
- Total acres audited: 212.2

Results

To date, the Small Acreage Irrigation Ambassador program has provided 58 landowners with onsite feedback. For example, landowners using furrow irrigation systems might learn that water is not actually coming out of the pipe gates at a high enough flow rate to effectively water fields. Or they might learn that they have two soil types in different areas that absorb water at different rates, or that a blocked culvert is preventing sufficient field drainage. Audit reports detail these findings and help landowners understand how much water should be applied to their fields based on their irrigation system, soil type and crop or grass variety.

In early 2012, Reich derived a classification system to compare the irrigation water management practices of the 212 acres audited in 2011. The classification ranks how effectively, efficiently and uniformly irrigation water has been charging the soil.

Classification	% of audited acres	Indication
Poor	9	Excessive soil saturation and visible, unwanted runoff/ponding
Needs improvement	42	Excessive soil saturation or unwanted runoff/ponding
Adequate	38	Some excessive soil saturation with minimal unwanted runoff/ponding
Excellent	10	Good soil moisture and no unwanted runoff

Throughout 2012, CSU Extension and the Mesa Conservation District will assess the potential and actual management changes that landowners have made. Funding from the original CWCB-Colorado Roundtable grant plus additional contribution from partners will cover costs through the end of the year. Funds have also supported the production of a promotional video that can be accessed at: www.ext.colostate.edu/irr_assess/sm_acre.html.

Improved irrigation water management benefits individuals, the community and the environment in several ways:

- Proper irrigation saves time and money spent controlling weeds and managing water problems. Neighbor disputes in small acreage communities are often over water. Reducing the amount diverted and applied can often improve the rural life experience for both parties.
- Hay, pasture and crops are more productive when evapotranspiration is kept in balance. Temperature, relative humidity, precipitation and other weather factors affect how much moisture evaporates from the soil and how much water plants transpire during photosynthesis.
- Reduced ponding limits the number of mosquito breeding sites. A potential reduction in mosquito populations increases the quality of life for area residents.
- Reducing excess runoff lessens the amount of salt and selenium, as well as unused nutrients and fertilizer that are transported into rivers. In furrow and flood irrigation, much of the unneeded water percolates below the root zone, mobilizing potential contaminants.

“Roots need to respire when the sun goes down. If you’re water-logging the root system then you’re just stressing the plant. If you can help landowners feel OK about putting less water on, then they’re often relieved to learn they can spend less time irrigating with better results.”

—Denis Reich, CSU Extension western region water resources specialist

“From our perspective, the Small Acreage Irrigation Ambassador program has been a real success. We’ve instituted the program as part of our integrated pest management process. We would much rather deal with mosquito control from a water standpoint than through pesticides.”

—Zane McCallister, manager, Grand River Mosquito Control District

Salt & Selenium

The transport of salt and selenium into the Colorado River watershed is a big concern for Western water resource stakeholders. Irrigation leaches these highly concentrated and naturally-occurring minerals out of the soil. Over-irrigation compounds the problem. Salinity is mostly a concern for downstream agricultural users because of the ways it decreases crop yields. Selenium is a problem for local endangered fish species.

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Impact

Colorado State University
Extension

Sharing the difference CSU Extension makes in people's lives and their communities.

Solutions for today's gardeners

Extension's network of 1,500 Colorado Master Gardeners helps Coloradans overcome gardening challenges and improve their lives.

Issue

Social, environmental and technological changes have broadened the needs and interests of gardeners. For instance, the 2008 economic downturn prompted renewed and widespread interest in backyard and community gardening, local food production and food security. Coloradans from all walks of life seek unbiased and trustworthy gardening know-how to address concerns, keep pace with ongoing change, and sort through a host of gardening information now available.

Extension's Response

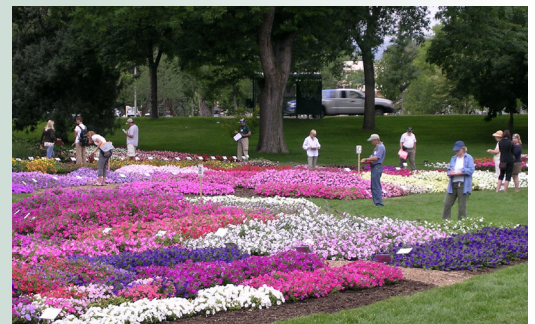
Since 1975, Colorado State University Extension's network of 1,500 Colorado Master Gardener (CMG) volunteers has provided research-based gardening information, at the county level, through one-on-one contacts, programs and other outreach. Volunteers help the public reduce inputs into the landscape, improve soils, conserve water, diagnose lawn and tree problems, and learn to grow food and flowers.

In recent years, county-based CMG coordinators and volunteers have diversified their programming to address food security, community development, social and physical challenges, and environmental constraints. Examples from around the state include:

- Backyard and community gardening classes and tours
- Junior master gardener programs and other youth-focused initiatives
- Water-wise, low-precipitation, and native plant tours and demonstration gardens
- High altitude gardening/season extension research, education and demonstration
- Expanded CMG-managed farmer's markets
- Horticulture therapy at schools for the blind, rehabilitative hospitals and other settings.

To help individuals and communities keep pace with gardening best practices and solutions, CMG coordinators and volunteers have improved public access to information through new media outreach. Several county CMG programs share seasonal, local and reliable gardening know-how through blogs, websites and Facebook postings.

CSU Extension has expanded and strengthened its CMG volunteer base to reach more individuals and communities across the state. Online distance learning has brought the CMG program to rural and remote communities. Furthermore, the Front Range advanced plant diagnostic program helps experienced CMG volunteers refine their expertise and more efficiently resolve plant problems.



The Bottom Line

- Statewide, CMGs are the public's leading source for responsive, unbiased, research-based gardening know-how.
- CMGs help Coloradans save money, garden responsibly, improve landscapes, grow their own food, strengthen local food systems, build communities, and overcome physical and social challenges.

By the Numbers

- Number of CMG volunteers: 1,550
- Volunteer hours reported in 2011: 65,100
- Value of volunteer time: \$1,407,000
- 2011 Food bank donations in pounds: 19,700
- Number of youth reached in CMG projects: 6,600

Impact

Around the state, county CMG volunteers report helping Coloradans improve the quality of their lives through gardening. From teaching young children and families how to grow their own food to demonstrating water-saving solutions for residential landscapes, CMG volunteers extend research-based information that helps people make informed choices regarding resource issues.

In 2011 alone, CMG volunteers reported donating more than 65,000 hours in service to their communities. The value of these hours equals \$1,407,000. These contributions of time and expertise occur at many levels, from answering questions at county Extension offices to mentoring low-income families over the span of a growing season.

The following list generated by Extension agents and CMG volunteers showcases the impact of their diverse efforts:

- CMGs help families and individuals learn to grow their own food, develop self-sufficiency skills, adopt healthy lifestyles, and stretch dollars during tough economic times.
- CMGs assist communities in strengthening local food systems and addressing regional food security by helping improve local food production and donating produce to food banks. Outcomes on research of new techniques for extending the garden season, particularly at elevations above 6,000 feet, will contribute to this impact.
- CMGs promote economic development and increase access to local foods through farmer's markets and food-based community events that celebrate local food and seasonal harvests and attract thousands of citizens.
- CMGs promote and share environmentally responsible gardening solutions via water-wise, low precipitation xeric gardens and appropriate pesticide use. Homeowners save money, conserve resources, and improve property values.
- CMGs help youth develop ecological understanding, lifelong gardening skills, an ethic of community service, and a taste for nutritious foods.
- CMGs provide opportunities for youth and adults to overcome physical or social challenges to quality of life. For example, sensory learning gardens at Denver-area schools for the blind help develop connections between touch, taste and smell.
- The number of Coloradans with access to gardening expertise, information and assistance has increased from new media initiatives, annual symposia, community festivals, and an expanded CMG volunteer base.

County Partners

Colorado Master Gardeners are active in 41 Colorado counties, engaging residents with gardening expertise, technical assistance and outreach programs. For a complete list of county and area programs visit: <http://cmg.colostate.edu/volunteering.shtml#countycontact>.

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. Updated June 2012. Written by Carol Busch.

“The hundreds of visitors who come to our xeric tour always include new residents who have no idea what can be grown in this area, and need help getting started. Even if visitors walk away with just one gem—learning the right tree to plant here, how drip irrigation works, that pea gravel is a great mulch, that there are alternatives to a bluegrass lawn—we have helped educate and inspire them to be more successful gardeners within the constraints of our environment.”

— Edith Brideau
Pueblo County Extension Colorado Master Gardener

Learn More

CSU Extension documents outcomes from Colorado Master Gardener programs around the state. Read how individuals and communities across Colorado are improving their gardening know-how with the help of CMGs.

Visit: www.ext.colostate.edu/impact/impact.html to read about regional and local programs.

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Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

Learning about native plants supports natural resource conservation

Extension's Native Plant Master® education program encourages Coloradans to adopt landscaping practices that help save water, money and time.

Issue

Colorado's growing population puts increased demand on limited natural resources, especially water. Urban gardens and landscapes are often planted with water-hungry, non-native species. At the same time, non-native noxious weeds invade natural landscapes and pose a threat to native ecosystems. Residents and landowners—as well as green industry and land management professionals—seek landscaping solutions that conserve natural resources.

Extension's Response

Colorado State University Extension created the Native Plant Master (NPM) education and volunteer program 15 years ago, to raise awareness about native plants, sustainable landscapes and threats to native ecosystems, including invasive weeds.

Jefferson County Extension launched the state's first NPM training in 1997. Today, 14 Extension offices around the state offer hands-on courses taught by county agents and other NPM trainers. Each course is divided into three sessions which cover:

- Plant identification using a key along with a botanical field guide;
- Ecological relationships between noxious weeds, native plants and insects, birds and wildlife;
- Landscape and other human uses for Colorado native plants.

Native Plant Master instructors teach courses on trails in local open space parks and other public lands. This means participants see firsthand the plants inhabiting the ecosystems and life zones that are unique to the area. Field learning is supplemented by CSU Extension's online Colorado Plant Database (<http://coloradoplants.jeffco.us>) which provides research-based information on more than 1,000 Colorado plants.

These courses are open to the general public; volunteer certification is optional. To earn certification, participants must pass three courses and make at least 60 educational contacts from leading nature walks as a docent at a natural area and educating customers to talking with neighbors about native and non-native plants.

The education program has continually attracted a broad range of individuals—from homeowners, garden center employees, landscape architects and open space planners—to natural area docents, government employees and small acreage landowners. In 2011, 926 individuals were trained in NPM courses and special classes. That same year, a total of 395 volunteers reported 17,901 educational contacts using information they learned from the program.



The Bottom Line

- In 2011, for every dollar Extension spent on non-personnel program costs in Jefferson County, NPM participants quadrupled that in self-reported savings from sustainable landscaping and weed control efforts.
- Extension's Native Plant Master® education program encourages Coloradans to adopt sustainable landscaping practices while enhancing the job performance of many program participants.

By the Numbers

- Reported statewide economic impact: \$95,395¹
- Reported acreage impacted statewide: 164,526
- Reported Cost/Benefit of NPM in Jefferson County: \$1 = \$4.06
- NPM Revenues: \$24,942
- NPM Volunteers: 395
- NPM Participants: 926
- Direct educational contacts: 17,901

Impact

The Native Plant Master education and volunteer program has become a state leader in training people about the relationship between water conservation, native plants, alien invasive weeds and sustainable landscapes. The program is coordinated by the CSU Extension Native Plant Education team, which received the 2011 Extension Team Distinguished Service Award.

Thousands of Coloradans are annually educated by a few hundred NPM volunteers. The team annually measures this impact through a survey asking program participants to report on sustainable landscaping and weed mitigation projects they complete. In 2011, volunteers from across the state reported a combined savings of \$44,920 from reduced landscape inputs such as water, pruning and pest control as a result of planting native species on more than 85,000 acres of public and private land.

Volunteers also reported a combined \$50,475 in savings from improved grazing, crop output, ornamental landscapes, wildlife and tourism, and beginning or increasing weed control efforts of non-native plants—on more than 79,000 acres of public and private land. These figures indicate that CSU Extension has found a cost-effective way to increase the sustainability of Colorado's public and private landscapes while reducing invasive weeds.

Additional results from the 2011 statewide NPM survey highlight many of the program's benefits to both participants and the people they contact through volunteer and paid work. Survey respondents reported that:

- 96 percent increased their native and non-native plant identification skills;
- 92 percent increased their awareness of the impact of alien weeds and the importance of controlling them;
- 89 percent increased awareness of the use of native plants for sustainable landscaping.

Sixty respondents reported that taking the NPM program helped them retain their current job or get a new one. This happens across vastly different fields of both paid and volunteer work as shown by these quotes from the survey:

- *I took two NPM classes prior to applying for a position on with the city's ecological restoration crew. I was told that my experience identifying native and invasive plants was a deciding factor in my selection.*
- *I worked for two golf courses and thanks to this program I was able to change landscaping on the courses into more native areas, reducing labor, and water and chemical use. This helped save the golf course's money and helped me retain my job.*
- *I was campaigning for elected office by canvassing the neighborhoods in my district. I used the knowledge I gained from the Native Plant Master courses to speak to voters and constituents about their lawns and sustainable gardens.*

Native Plant Master Mission

To educate the public about native plants in order to foster stewardship, sustainable landscaping and management of weeds that threaten native ecosystems.

¹ Economic impact stems from self-reported savings related to improved grazing, crop output, ornamental landscapes, wildlife habitat, tourism, and reduced landscape inputs such as watering, pruning, pest control, etc., as a result of alien weed control and planting natives.

"It is the best educational experience I have had through my local Extension office. It is outside, hands-on, taught by passionate, intelligent people, and has real world applications."

– Native Plant Master program participant

"I have used my identification skills to educate my crew mates about what plants to collect for restoration projects, what plants to leave alone, and what plants to remove during invasive plant control efforts."

– Native Plant Master program participant

Native Plant Master County & Area Partners

Boulder
Custer
Douglas
Eagle/Garfield
Golden Plains Area
Jefferson/Gilpin/Jefferson
Larimer
Logan/Morgan
Montezuma/Dolores/La Plata
Pueblo
San Miguel/West Montrose
Summit
Teller
Tri-River Area

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Impact

Sharing the difference CSU Extension makes in people's lives and their communities.

From garden surplus to community hub: Larimer County Farmers' Market

More than 30 years after opening, a market established and maintained by volunteers has increased awareness of small farms, grown sales for local foods and become a business incubator.

Issue

In the mid-1970s, finding a way to help backyard gardeners sell surplus produce was top priority for Larimer County Extension Colorado Master Gardeners (CMGs). This volunteer group approached their county Extension office with the idea of starting a local market. More than 30 years later, volunteers remain the backbone of the market—now one of the most successful volunteer-managed markets in the state.

Extension's Response

Larimer County Extension originally supported the market by funding the construction of a CMG information booth, establishing operating policies and managing finances. Larimer County CMGs organized and managed all other aspects of the market. Volunteers can now choose the market, from many options, as their payback for the horticulture training they receive.

Extension's fiscal and administrative oversight has increased as the market's season, vendor numbers and community interest has grown. Alison O'Connor, Larimer County Extension horticulture agent, has learned to sustainably increase and develop the market with help from Martha Sullins, CSU Extension regional agriculture and business management specialist. O'Connor says veteran market volunteers have also been an invaluable resource in directing market growth. In 2009, O'Connor hired a market assistant, Jean Reeder, to support continued expansion.

Today, the market is open Saturday mornings, in downtown Fort Collins, from May through October. Each week up to 75 vendors sell their products in the Larimer County Courthouse parking lot. Vendors primarily include local and direct market farmers, as well as value-added food producers and artisans. Both CMGs and Larimer County Extension Master Food Safety Advisors staff the Larimer County Extension information booth to answer customer questions about growing, using and preserving food.

Each week six CMG volunteers set up and take down the market under the direction of one 'Market Master' and one 'Assistant Market Master.' During the market, volunteers also assist customers purchasing Supplemental Nutrition Assistance Program (SNAP) benefits coupons or same-as-cash 'Market Bucks.' At the end of each market, volunteers collect taxes (city and state) and fees (six percent of sales) from vendors.

In 2006, market sales totaled \$222,307 and by 2011, market sales had increased 50 percent to \$453,353.



The Bottom Line

Larimer County Extension and its Colorado Master Gardener volunteers have created a business asset that is a benefit to the community on many levels by:

- Serving as a small business incubator for direct market farmers
- Expanding regional food security and food safety
- Promoting agricultural literacy, local foods and community development

By the Numbers

- 2011 market revenue: \$453,353
- Larimer County Extension's revenue: \$27,000
- Volunteer hours needed to run each market: 32
- 2011 Value of volunteer time: \$21.62/hour

Impact

As sponsor of the Larimer County Farmers' Market for more than three decades, Larimer County Extension and its Colorado Master Gardener volunteers have created a community asset that benefits the public on many levels. Specifically, the market:

- Serves as a small business incubator for direct market farmers.
 - Extension's Colorado Building Farmer's program (CBF) trains farmers how to create business plans and sustainably develop their operations. The market provides a low-risk retail venue for putting those plans in place. Nic Koontz, co-owner of Native Hill Farm with Katie Slota, took CBF in 2009 and 2010. The program taught him to make an informed and realistic business plan. "It has enabled us to move our business forward to a point where we are both full time farmers," says Koontz. Native Hill is one of the market's top selling producers.
 - Larimer County Extension offers affordable access to the local market place. Cost to apply: \$50. Cost to participate: weekly sales tax and percent of revenue fee. Financial accessibility promotes diverse participation, from new to well-established regional growers, and offers producers the chance to compete, grow and diversify.
- Expands food security and food safety.
 - The Larimer County Farmers' Market is the county's only summer market to accept electronic benefit transfers from SNAP. This expands access to the purchase of fresh, nutritious and locally-grown food, regardless of income level. Use of SNAP Benefits Coupons has increased 77 percent since first introduced in 2007.
 - Most vendors donate unsold produce to the Larimer County Food Bank.
 - Immediately following the 2011 listeria outbreak, Master Food Safety Advisors gave customers and vendors responsive, current and science-based information.
- Promotes agricultural literacy, locally grown foods and community development.
 - The Larimer County Farmers' Market is a dynamic venue for educating the public. Vendors refer customers with gardening questions to CMG volunteers. Master Gardeners likewise refer customers back to vendors for pricing and food availability, as well as information on difficult-to-grow and unusual vegetables.
 - Mary Miller, market manager for Ela Family Farms, says market customers continue learning about local foods and agricultural production. "We give customers real time information and education about fruit, the farm, and the seasons, so that customers can expand their knowledge and awareness of what it takes to bring a piece of fruit to market," Miller says.
 - The market has become a community hub linking consumers and producers through business and social relationships.
 - Fees from vendor sales fund all of the market's operating costs and support the CMG program in Larimer County.

According to O'Connor, Larimer County recognizes these many benefits and is proud to partner with CSU Extension in providing this community asset. In 2012, the market will expand from 17 to 24 weeks. Farmers can now grow more food earlier in the year due to season extension measures. The Larimer County Farmers' Market is a volunteer project that exists due to CMG commitment. According to O'Connor, it would not exist without the CMGs.

"You see a little tent here, but there are hundreds of people behind it."

—Denise Culver, CMG volunteer on the Larimer County Extension market booth

"Having the CMGs involved makes our program stronger because they have integral roles in keeping this market operational. In a way they are like 'employees'—extremely dedicated employees. Without them, there would be no market—we don't have the funds to run this market without the help of the volunteers."

—Alison O'Connor, Larimer County Extension horticulture agent

"The level of community that is present in the old town market is unprecedented. It isn't a bunch of discreet patrons; the market is a hub of community."

—Mary Miller, vendor, Ela Family Farms

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Sharing the difference CSU Extension makes in people's lives and their communities.

Growing the future

Junior Master Gardener promotes self-sufficiency and healthy habits for Teller County youth.

Situation

A 25-mile drive connects Cripple Creek residents to the nearest town with a large-scale grocer. In 2008, rising gas prices sparked community-wide interest in learning to grow food, despite the town's 9,500-foot elevation. An unused city-owned greenhouse behind the town's Parks and Recreation facility offered a much-needed space for high altitude gardening by people of all ages. But, most local youth didn't know how to garden. Mark Platten, Teller County Extension director, wanted to reverse that trend.

Extension's Response

In 2008, Platten received a grant from Colorado State University Extension to launch a Cripple Creek Junior Master Gardener (JMG) program based on an international JMG program developed by Texas AgriLife Extension Service. The youth-focused program promotes a love of gardening, develops an appreciation for the environment through education and community service. Through JMG students learn about plants, soils, ecology, insects, vegetable gardening and eating healthy foods.

Numerous community partners joined Platten in developing and operating the Cripple Creek GreenHousers JMG program. Larry Stebbins, a retired educator who runs Pikes Peak Urban Gardens, helped Platten adapt the JMG curriculum for Cripple Creek's high altitude environment. The City of Cripple Creek and its Parks and Recreation Department provided facilities and recruited students. Many other partners donated materials, time, facilities, educational expertise and money. They are listed on the back of this report.

That first summer, 33 students from six to 14 years of age learned about soils, water, compost, and growing vegetables. They planted tomatoes, peppers, cilantro and other vegetables in five greenhouse plots that residents from the Cripple Creek Rehab and Wellness Center helped maintain. Students also took field trips to sample vegetables grown by local gardeners and explore native plants, and terrestrial and aquatic ecosystems. They celebrated the end of the program with a harvest and cooking feast at the Aspen Valley Ranch in Woodland Park. Following the feast, students were recognized with JMG certification.

Platten has since expanded the curriculum so students who return each year can learn new information and skills. For example, in 2009 the program featured a class on native natural fruits. Students harvested wild raspberries and learned about food preservation by canning and making preserves.

Since 2008, more than 135 Teller County youth have received JMG certification.



The Bottom Line

- The Teller County Junior Master Gardener program has expanded local food production and encouraged high altitude gardening.
- JMG motivates youth and their families to grow food, plant gardens, give back to their communities, and discover the benefits of eating healthy foods.

Results

The Cripple Creek GreenHousers JMG program has experienced great success in its four-year history. Participant evaluations show that students have learned to garden and are making healthier food choices. Some students report trying and liking foods they've never eaten before. They also say they have a better understanding of where their food comes from, and an increased awareness of the importance of the natural environment.

Students have begun entering the food they grow in the Teller County fair and received recognition for their efforts. Ribbons were displayed at the Cripple Creek Parks and Recreation facility. According to Platten, students now have the confidence they need to start their own family garden. Meanwhile, some families adopt the JMG greenhouse plots following the program's end and donate surplus produce to the local food bank.

GreenHouser JMG students have also learned leadership skills from cross-generation and peer mentoring. Youth learned from and worked with Master Gardeners, community leaders and residents of the Cripple Creek Rehab and Wellness Center. Older JMG students assisted younger students in managing greenhouse plots and helping them during educational activities.

In the summer of 2010 and 2011, students experienced a new level of community involvement and civic pride with a free 'Soup For Community' event. GreenHousers made soup with the help of local junior high students using vegetables they grew and produce that was donated by local growers. The Aspen Mine Center, a community food bank, provided stock, beans, breads and cookies. The local high school donated their kitchen and cafeteria. Leftover soup was donated to a food bank in nearby Divide. Nearly 200 people have attended the event, which includes a recognition ceremony for GreenHousers.

The community collaboration and combined outcomes of the GreenHouser JMG program has resulted in state and national recognition. In 2008, the program received the Excellence in Agriculture award from the Colorado Association for Environmental Education. In 2009, the program received a Diversity Award from the Colorado chapter of the Extension Professional's Organization, Epsilon Sigma Phi (ESP), and national ESP recognition in 2010.

Colorado State University Extension, U.S. Department of Agriculture and Colorado counties cooperating. Extension programs are available to all without discrimination. Updated June 2012. Written by Carol Busch.

Partners

The following individuals and organizations have played a key role in establishing the JMG program throughout Teller County.

City of Cripple Creek

Cripple Creek Parks & Recreation Department

Pikes Peak Community Foundation

Teller County Public Health

Colorado Master Gardeners of Teller County

The Catamount Institute

Cripple Creek Rehab & Wellness Center

Gordon Jackson Foundation

Teller County Fair

Nutritionist Jerianne Heimendinger

Gateway Elementary School

Cripple Creek-Victor Junior/Senior High School

Aspen Mine Center

Pikes Peak Urban Gardens

Diggin' in the Dirt

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Sharing the difference CSU Extension makes in people's lives and their communities.

Wise use of human and natural resources

El Paso County Master Gardener volunteers discover personal and community benefits beyond seasonal color and fresh tomatoes.

Situation

Colorado Springs officials encourage citizens to adopt conservation measures, such as water-wise landscaping, to offset growing demand for municipal water. For more than 25 years, Colorado State University Extension's horticulture program and Colorado Master Gardener (CMG) volunteers have helped residents throughout El Paso County rise to the challenge by teaching resource-conserving landscape and gardening practices. When county budget cuts led to the program's hiatus in September 2009, public access to much-needed, research-based horticulture information was significantly reduced.

Extension's Response

In 2010, the El Paso County Board of Commissioners worked with CSU Extension to reinstate the horticulture program by combining two positions—director of CSU Extension in El Paso County and horticulture agent—into one. In September 2010, Barbara Bates was hired.

This change meant El Paso County Extension could revive its CMG program. It did so by inviting previously active CMG volunteers to consider rejoining. In November 2010, interested volunteers attended a meeting to learn about the program's future direction and purpose. Sixty-six former El Paso County CMG volunteers attended.

At the meeting, volunteers were asked to complete an optional, 12-question survey about their CMG experiences. The survey was designed to gather information on how the program adds value to the community and CMG volunteers. It was also designed to measure if and how the CMG program changed the gardening practices of its volunteers, and if those changes resulted in cost savings or resource conservation, such as reduced water use. Sixty-one volunteers completed surveys. See survey results on page 2.

By January 2011, 81 previously active CMG volunteers had rejoined the program. In this first year of operation, the director/agent and CMG volunteers focused their expertise and resources on serving El Paso County residents by staffing the Extension CMG Help Desk and offering a series of classes on resource-conserving landscape and gardening practices. Volunteers have also written articles for newsletters, presented a Q & A panel on local television and coordinated the El Paso County Fair horticulture competition.



The Bottom Line

- Colorado Master Gardener volunteers connect El Paso County citizens to resource-conserving landscape and gardening practices that generate economic and environmental impact.

By the Numbers

- Percent of Colorado Springs residential water used for home landscaping: 50
- Percent of CMGs who changed the way they garden: 98
- Percent of CMGs who decreased water use: 83

Results

Results from the 2010 CMG volunteer survey show that the program has contributed to the personal and professional development of volunteers while adding value to the community. According to survey results, the CMG program gave volunteers more directed purpose and connection:

- 98 percent reported that CSU Extension information and training changed the way they garden at home. A majority of respondents indicated making one or more of the following changes:
 - removing turf
 - using native or xeric plants
 - grouping plants with the same water and sunlight needs
 - using soaker hoses
 - mulching
 - tailoring water schedules.
- 83 percent reported that CSU Extension information and training led to decreased water use in residential landscapes and gardens.
- 88 percent reported that becoming a certified Master Gardener increased their level of county-wide volunteer involvement.
 - Volunteers listed 50 other community organizations they give their time to. This level of volunteerism, according to Bates, “shows that Extension is a phenomenal capacity builder that brings people together.”
- 91 percent reported that CSU Extension activities provided new and valuable community connections.
- 85 percent reported learning a significant aspect about themselves as a result of volunteering.
 - “I really like giving the public knowledge about their gardening quandaries... and I learn a lot from the research as well.”
 - “I especially enjoy doing research and being able to help people solve their gardening problems.”
 - “It has increased my awareness of the importance of community service and the satisfaction I get from providing horticultural education to the community.”
- 83 percent of the respondents who reported being employed in the green industry believe CMG certification has benefitted them professionally by enhancing their technical capacity to grow plants, tend soil, etc.

Beginning in January 2012, El Paso County Extension will expand the CMG program by offering 10-week training for new volunteer recruits.

“People are hungry for information to help with their gardening projects. Money saving tips are of value. If we are going to conserve water, education must continue.”

– CMG volunteer, El Paso County Extension

“We have this really valuable resource that was put on hold. It’s time to put the program and CSU Extension’s research-based information back to work to benefit everyone.”

– Barbara Bates, director and agent
El Paso County Extension

Learn More

El Paso County Master Gardener Help Desk:
Phone (719) 520-7684
e-mail: CSUMG2@elpasoco.com

To become a CMG volunteer, visit:
www.cmg.colostate.edu

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