This year, University of Nevada Cooperative Extension’s offices throughout Nevada participated in the national recognition of the centennial of the founding of Cooperative Extension. They did so in the most appropriate way—by receiving proclamations at monthly county commission meetings. I was fortunate to be able to receive county proclamations on behalf of the University of Nevada, Reno and our fine and dedicated faculty and staff in Churchill, Clark, Douglas and Washoe Counties, and other members of our team received proclamations in Carson City, Elko, Eureka, Lincoln, Nye and White Pine Counties. Governor Brian Sandoval also issued a proclamation and participated in a video celebrating the centennial in Nevada. (See www.unce.unr.edu/about/centennial/.)

Our county offices are the University’s important link to communities that need to resolve a wide range of issues. Our county-based staff work with community members to identify needs and define solutions. Our faculty members bring expertise to their positions, and they also rely on their abilities to make connections on behalf of the counties in which they live.

Our programs continue to address Nevada’s major needs—coping with fire and drought, developing workable solutions to public land management issues, finding new opportunities for economic development, engaging youth and families in 4-H, providing training and education in health and nutrition, assisting agricultural producers and ranchers with challenges, and developing strong partnerships that benefit Nevada’s communities. Our faculty received local, state, national and international recognition for their excellent work in 2013. You will see examples of these awards in this annual report.

As the next century of Nevada’s Cooperative Extension begins, we continue to take an adaptable and flexible approach to connecting Nevadans with the resources needed to put the University to work in our communities.

This annual report sketches some of our best efforts from 2013. We hope that you recognize those that have been in place and valued for some time, such as Living With Fire. We also hope that you will see Nevada’s emerging needs reflected in new initiatives, such as our research related to horticulture and our educational work in the emerging unmanned aerial vehicle industry.

Thanks for your continued support of University of Nevada Cooperative Extension. On behalf of the county-based staff, I invite you to visit our offices to talk about how we can continue to meet your needs.

Mark Walker, Dean and Director
walkerm@unce.unr.edu
775-784-7070

MESSAGE FROM THE DEAN

I’m pleased to join the Nevada family in recognizing the centennial of the founding of the Cooperative Extension. The founders of the Cooperative Extension back in 1914 would be amazed at what the Extension has become today.”

– Nevada Governor Brian Sandoval
2013 Accomplishments

Contacts with youth and adults throughout Nevada made by faculty and staff

Visitors to the www.unce.unr.edu website

Funding procured by faculty and staff in grants

New educational publications, fact sheets and curricula published by faculty

2013 Fiscal Year Funding

Temporary bridge funds, $2,418,250, 12%
Gifts, $177,095, 1%
Sales, $316,123, 1%
Grants, $4,239,533, 21%
County, $7,912,501, 39%
State, $2,859,930, 14%
Total Federal, $2,378,808, 12%

Contents

With programs addressing: Natural Resources • Agriculture • Horticulture • Children, Youth & Families • Health & Nutrition • Community Development

Bootsraps
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4-H Youth Development
ALITAS: Alliance of Latinas in Teen Action and Solidarity
Career Edge: Teens Taking Charge of Their Future
Project MAGIC
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All 4 Kids: Healthy, Happy, Active, Fit
Nevada Radon Education Program
Chefs for Kids
Little Books & Little Cooks
Small Steps 4 Big Changes
Good Agricultural Practices
Breastfeeding Support, Promotion and Protection
Stronger Economies Together (SET)
Beginning Farmer and Rancher Financial Mentoring
Unmanned Aerial Systems (UAS)
Evaluation of Perennial Grasses for Cellulosic Biofuel
Bootstraps was one of only 20 programs nationwide to receive the 2013 Partners in Conservation Award from the U.S. Department of the Interior for achievements in conservation of natural resources that include collaborative activity among a diverse range of entities. The program, initiated in 2005 by Lander County Extension Educator Rod Davis, gives at-risk young adults, ages 18 to 25, the opportunity to be involved in natural resource project work, such as restoring sage-grouse habitat. Participants receive practical classroom instruction and field experience 40 hours a week for six months, getting paid and gaining skills and decision-making abilities to return to school or enter the workforce.

### From 2005-2013:

| **130** | at-risk young adults were employed by Bootstraps, two-thirds of whom are Native American |
| **150** | riparian micro-enclosures were constructed by Bootstraps crews to protect Aspen tree stands |
| **2,000** | noxious-weed infested acres have been treated by Bootstraps crews |

| **12,000** | acres were cleaned up by Bootstraps crews who removed pinyon-juniper trees, primarily in sage-grouse habitat |
| **34** | targeted skills and abilities out of 37 assessed, in which 2013 participants showed statistically significant improvement |
| **34** | riparian micro-enclosures were constructed by Bootstraps crews to protect Aspen tree stands |
| **2,000** | noxious-weed infested acres have been treated by Bootstraps crews |

**Program Partners:**
- U.S. Bureau of Land Management Battle Mountain District
- Duck Valley Sho-Pai Tribe
- Eureka County
- Lander County
- National Mule Deer Foundation
- U.S. Department of Agriculture and its Natural Resources and Conservation Service
- Nevada Bighorns Unlimited
- Nevada Department of Wildlife
- University of Nevada, Reno College of Education

“**It is hard work. It pays off when you see that your project is done — how much difference it makes to the environment, either the fencing or working with endangered species like sage-grouse — making a home for them.”**

– Bootstraps participant
Cooperative Extension’s collaborative Sage-Grouse Planning and Research efforts have been ongoing since the 1980s. Most recently, Douglas and Humboldt County Extension Educators Steve Lewis and Brad Schultz, and Natural Resources Specialist Kent McAdoo, have helped various groups formulate plans for enhancing the species’ habitat that also meet the needs of ranchers, landowners and land managers. In addition, McAdoo conducted research 2009-2012 in collaboration with researchers from the Eastern Oregon Agricultural Research Center on using sagebrush transplants, rather than seeding, to restore sagebrush habitat for sage-grouse and other sagebrush-dependent species. The results were published in *Rangeland Ecology & Management* in 2013, with some findings below.

**The Sage-Grouse Challenge: Planning and Research**

Helping to preserve the species and its habitat, while meeting the needs of landowners and managers

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**300%** increase in sagebrush density was achieved in some areas where competing herbaceous vegetation was controlled in the 2009-2012 research project near Elko

**96%** of the plantings had live plants one to two years after planting

**49** meetings were facilitated by Douglas County Extension Educator Steve Lewis since 2011 with five regional groups to help develop action plans for dealing with the sage-grouse issue

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*Transplanting sagebrush can be very effective and doable. Transplants are ideal for small areas. For larger treatments like post-fire application, you can establish islands of transplanted sagebrush in key areas so the plants can provide a seed source over time and recolonize the site."

— Natural Resources Specialist Kent McAdoo, on using transplants for sagebrush habitat restoration, vital to sage-grouse

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(Program Partners: Nevada Sagebrush Ecosystem Program; the Bi-State, Washoe Modoc Lassen, Lincoln County, White Pine County and Stewardship Alliance for Northeastern Elko working groups; Northeastern Nevada Stewardship Group; U.S. Fish and Wildlife Service; U.S. Forest Service; U.S. Bureau of Land Management; U.S. Department of Agriculture Natural Resources Conservation Service; Nevada Department of Transportation; California Fish and Game Commission; U.S. Geological Survey; Nevada Association of Conservation Districts; National Park Service; Southern Nevada Water Authority; University of Nevada, Reno College of Agriculture, Biotechnology and Natural Resources; Eastern Oregon Agricultural Research Center; ranchers and landowners; mining and power companies)
Horticulture Specialist M.L. Robinson started the Nevada Naturalist Program in 2008 to target adult learners interested in environmental issues affecting southern Nevada. Program graduates who complete at least 60 hours of classroom and field instruction have the opportunity to volunteer with partnering agencies. The short-term goal for this program is to continue to educate new participants about southern Nevada’s natural resources. The intermediate goal is to have an educated corps of volunteers who will benefit the community. The long-term goal is to develop a self-sustaining group who will be able to work in, and teach others about, southern Nevada’s natural resources.

“Overall this program is Outstanding! It has given me the education and resources that I needed to make a career change!”
— fall 2010 graduate of Nevada Naturalist

From 2008-2013:

- **23** new projects were developed by Nevada Naturalists, including a two-day hands-on birding workshop at Henderson Bird Preserve; a “Nevada After Dark” astronomy workshop; and a two-day southern Nevada geology lecture and field trip to Red Rock Canyon
- **4,000+** volunteer hours were contributed by Nevada Naturalists at community events
- **135** Nevada Naturalist participants graduated
- **89%** of those who enroll complete the program

**Program Partners:**
- Henderson Bird Preserve, Red Rock Canyon National Conservation Area, Nevada State Museum at Springs Preserve, Clark County Wetlands Park, U.S. Fish and Wildlife Service, National Park Service; Nevada Department of Wildlife

During a Nevada Naturalist session, Horticulture Specialist M.L. Robinson introduces “the great pretender” gopher snake, colored like the rattler, but harmless to humans.
In 2005, Humboldt County Extension Educator Brad Schultz assisted Natural Resources Specialist Kent McAdoo with development of the Nevada Range Management School, a grazing management education program for livestock producers and land-management agencies. The workshop’s goal is to improve vegetation and livestock management to sustain healthy rangelands for multiple uses. In 2011, the U.S. Forest Service International Program invited Schultz and Forest Service personnel to Morocco to develop a Moroccan Range Management Training for shepherders in overgrazed areas of the Middle Atlas Mountains. Schultz is now assisting Forest Service staff with a similar program for Georgia in Eurasia.

50-71% of Nevada program participants indicated they incorporated some or a great deal of what they learned into their work within six to 12 months after participating in the program 2006-2008.

670 Nevada agency specialists and livestock owners have been educated by the program since 2005.

15 Moroccan agency specialists and livestock owners have been educated by the program since 2011.

17 attendees (representing 12 countries) were trained in range management by McAdoo and Schultz at the 2014 U.S. Forest Service International Program’s International Rangeland Seminar.

1st implementation of a managed grazing system in the Middle Atlas Mountains of Morocco was completed as a result of the program. A 1st implementation of a managed grazing system in the Middle Atlas Mountains of Morocco was completed as a result of the program.

“...The [Moroccan] High Commission for Forests, Water, and Desertification and the community stakeholders in Azrou have developed a new grazing management plan that will use a deferred-rotation grazing system. This was developed based on the concepts learned in the Range School.”

– Natasha Marwah, U.S. Forest Service International Program coordinator for the Middle East and North Africa

Program Partners: U.S. Bureau of Land Management; U.S. Forest Service Humboldt-Toiyabe National Forest; U.S. Forest Service International Program; U.S. Department of Agriculture Natural Resources Conservation Service and National Institute of Food and Agriculture Sustainable Agriculture Research and Education Program; University of Nevada, Reno College of Agriculture, Biotechnology and Natural Resources; the Nevada ranching industry; Grazing Lands Conservation Initiative; Moroccan High Commission for Forests, Water and Desertification.

Trainees near Azrou, Morocco, learn the basics of how to monitor vegetation on rangelands.
Living With Fire teaches homeowners how to live more safely with the wildfire threat. The collaborative program is directed by Natural Resources Specialist Ed Smith and has received numerous awards, including the “National Excellence in Extension Award” from the Association of Public and Land-grant Universities. A 2010 survey of homeowner participants indicated 91 percent had implemented some Living With Fire recommendations within the past year. Since 2010, the national strategy of “Fire Adapted Communities” has been incorporated into all program efforts, promoting the idea that a community should collectively strive to be able to survive a wildfire with little or no assistance from firefighters. See 2013 survey results below.

In 2013:

92.6% of homeowners reached by the program and surveyed had taken steps on their properties to become more “Fire Adapted”

14,696 people were reached through program presentations, events or activities in Nevada and the Lake Tahoe Basin

21,941 online visits were made to view program materials

19 states were using Living With Fire materials

Program Partners:
U.S. Bureau of Land Management, Nevada Division of Forestry, Sierra Front Wildfire Cooperators, U.S. Forest Service; Lake Tahoe Regional Fire Chiefs Association, Nevada State Fire Marshal Division and more than 130 program collaborators statewide

“The Nevada Living With Fire Program is one of the most influential and successful programs of its kind nationwide. Montana has directly benefitted from this program, as have many others.”

— Matt Walcott, executive director, Montana Fire Safe Council
The 2014-2016 Mineral County Nonpoint Source Pollution Education Project continues ongoing work the University and Cooperative Extension have been doing in the Walker River Basin for the past decade, researching and providing education about the area’s declining water quality and quantity, which impact fisheries, agricultural producers and others who live in or visit the area. This current project educates residents of Mineral County and the Walker River Paiute Indian Reservation about nonpoint source pollution and how to minimize it in Walker Lake, the Walker River and the Weber Reservoir. Workdays are conducted at the lake and the reservoir to educate youth and adults through hands-on activities.

**At the May, 2014 Walker Lake Workday:**

**96**

Hawthorne Elementary School students participated in the May 18, 2014 Walker Lake Workday, rotating among 12 workstations with educational activities.

**2.8 million**

metric tons of sediment erosion occurred in the Walker River, flowing into Walker Lake, 1995-2006

**Program Partners:** Nevada Division of Environmental Protection, Mineral County School District, Walker River Paiute Tribe

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"If you have pollutants on the soil, it directly impacts water sources, vegetation, wildlife and people. This program makes youth and adults think about what they put in our water sources and what they put on the ground, while providing additional education about Walker Lake environmental concerns.”

– Mineral County Commission Chair Jerrie C. Tipton
The Water Conservation Economics Program grew out of a need to assess the economic potential of various low-water-use crops in Nevada. Carol Bishop, now Northeast Clark County Extension Educator, with colleagues Staci Emm and Kynda Curtis, created the “Evaluating Alternative Low-Water-Use Crops for the Great Basin” five-module curriculum. Since piloting it in 2010, they have presented it in multiple states to 217 agricultural professionals from the U.S. Department of Agriculture and other agencies. More than 2,250 copies have been distributed, and Bishop and her colleagues have used the curriculum to evaluate eight crops for the Walker River Basin. Bishop has now begun a five-year project using the curriculum in southern Nevada. See photo caption.

"I am better prepared to answer questions from producers, and provide educational programs to help producers with water deficits.”

– agricultural professional who participated in the Water Conservation Economics course

From 2013-2019, Northeast Clark County Extension Educator Carol Bishop and John Cushman, a College of Agriculture, Biotechnology and Natural Resources professor, will evaluate the economic potential of three varieties of prickly pear as a crop in southern Nevada. Bishop will focus on its economic potential for human consumption (such as jellies, etc.), while Cushman will be evaluating its potential for biofuel and feedstock.

Six months after taking the course:

82% of agency participants have incorporated some of the course material into their operation or jobs

43% of agency participants have introduced the course curriculum into their programs for producers

35% of agency participants have assisted producers in implementing low-water-use crops on their land

39% of agency participants have worked one-on-one with producers to evaluate the economic feasibility of low-water-use crops on their farms or ranches

Program Partners: U.S. Department of Agriculture National Institute of Food and Agriculture Western Sustainable Agriculture Research and Education Program; Nevada Agricultural Experiment Station; University of Nevada, Reno College of Agriculture, Biotechnology and Natural Resources
The Herds & Harvest Program began with a three-year, $672,000 grant in 2011 from the U.S. Department of Agriculture’s National Institute of Food and Agriculture. Led by Mineral County Extension Educator Staci Emm, it provides Nevada’s ranchers and farmers information on financial management, entrepreneurship and marketing, as well as on sustainable agricultural practices. The program has provided 128 trainings on 10 different topics, attended by 1,530 producers. It has also provided one-on-one assistance to producers and built a network among Nevada’s farmers and ranchers, now 4,000 strong. The program is ongoing and is adding training in use of cover crops, soil and water management, viticulture and hops production.

From 2011-2013:

- **54%** of participants took actions toward long-term sustainability of their farms as a result of the program
- **51%** of participants changed marketing practices as a result of the program
- **52%** of participants changed production practices as a result of the program
- **57%** of participants reported the program directly improved profit in their businesses
- **61%** of participants changed food safety practices as a result of the program
- **75%** of participants reported the program benefited their operations
- **54%** of participants took actions toward long-term sustainability of their farms as a result of the program

**Program Partners:** U.S. Department of Agriculture National Institute of Food and Agriculture, Rural Development, Farm Service Agency and Natural Resources Conservation Service; Nevada Department of Agriculture; University of Nevada, Reno College of Business, College of Agriculture, Biotechnology and Natural Resources, and Agricultural Experiment Station

“As a result of our contacts with Carol, we became connected to the agricultural community, exchanging help, ideas and resources. Our business grew due to these connections and prompted changes in our methods.”

– agricultural producer, speaking of help from Northeast Clark County Extension Educator Carol Bishop

The Herds & Harvest Program provides information on topics useful to Nevada’s ranchers, as well as its farmers, such as workshops on processing and selling locally grown meat, food safety and business planning.
Mineral County Extension Educator Staci Emm and Interdisciplinary Outreach Liaison Loretta Singletary developed the People of the Land curriculum in 2009 to train U.S. Department of Agricultural and natural resource professionals in Idaho, Nevada, Oregon and Washington in more effective ways to assist American Indian producers in strengthening sustainable agriculture and natural resource management on reservations. The program won the 2011 National Extension Diversity Award and the 2010 Association of Natural Resources Extension Professionals Gold Award, and is expanding to include Arizona’s Hopi Reservation and the Navajo Nation in Arizona, New Mexico, Colorado and Utah. The curriculum has been adapted for use in schools, and is in its third printing.

From 2011-2013:

- 56% of Farm Service Agency personnel planned to implement additional outreach actions to provide programs to American Indians within six months of the training
- 3,995 copies of printed educational materials were distributed in response to public demand
- 250+ certified agricultural and natural resource professionals were trained under People of the Land
- 90 tribal members were trained under People of the Land

Program Partners: U.S. Department of Agriculture National Institute of Food and Agriculture Western Sustainable Agriculture Research and Education Program, U.S. Department of the Interior Bureau of Indian Affairs, U.S. Bureau of Land Management, American Indian tribes across the West

The work Loretta Singletary and Staci Emm have done with People of the Land has shown incredible initiative and has been a great public service to address a long-term need for people working in Indian country.”

— Rob Hedberg, national director of the Sustainable Agriculture Research and Education Program, Washington, D.C.
Nevada farmers go to Alternative Crops and Forage Specialist Jay Davison when looking to grow something new. The teff trials he began 12 years ago have resulted in Nevada growing about 50 percent of the teff sold in the country. With Nevada’s drought and expanding dairy industry, Davison is now conducting trials of low-water-use summer annual forage grasses. The hops vines the Workman family and he planted in 2012 at Workman Farms in Fallon are 20 feet high, and the 2013 harvest was high quality. Davison is now working with the High Desert Hops Project at the University’s Main Station Farm, a collaborative research project evaluating 10 hops varieties. Cooperative Extension Horticulture Specialist M.L. Robinson is also doing hops trials in Clark County.

“Of all the things I’ve ever grown, these are probably the most forgiving. They’re very well adapted for low-water-use conditions.”

– Cooperative Extension Alternative Crops and Forage Specialist Jay Davison, commenting on the four varieties of hops planted at Workman Farms in Fallon

Program Partners (current projects): Fallon hops research – Workman Farms. High Desert Hops Project – Nevada Department of Agriculture, Urban Roots; University of Nevada, Reno High Desert Farm Initiative and College of Agriculture, Biotechnology and Natural Resources. Summer annual forage grasses research – University of Nevada, Reno College of Agriculture, Biotechnology and Natural Resources
Master Gardeners educate Nevadans about growing plants in Nevada’s challenging climate and soils, as well as about practicing environmental stewardship. Nevadans are thirsty for answers to questions regarding home landscapes, vegetable gardens, fruit trees and more, and Master Gardeners provide research-based information to answer thousands of these questions each year, at Cooperative Extension offices, as well as at community events and farmers markets. After their intensive 50- to 80-hour classroom and hands-on training, Master Gardeners volunteer at least 50 hours per year, helping to establish demonstration, community and school gardens; teaching schoolchildren, adults and seniors the joys and benefits of gardening and healthy eating; and putting on workshops across the state.

**In 2013:**

- **62,387** people were provided information or assistance face-to-face by Nevada Master Gardeners
- **46,580** hours were volunteered by all Nevada Master Gardeners
- **540** active Nevada Master Gardeners volunteered
- **1,567** hours were volunteered by a single Nevada Master Gardener, Don Fabbi
- **13,591** calls and emails were answered by Nevada Master Gardeners

*Program Partners: Nevada Department of Agriculture; Nevada counties, parks, schools, community centers, nurseries, farmers markets and others too numerous to list*

> “I planted seeds and taught basic botany to elementary school students. Among my rewarding experiences was the low-reading-skill student who correctly answered the definition of a difficult word on a standardized test. When asked how he knew it, he responded, ‘I learned it from the Plant Lady!’ He meant me.”

— Barbara Weinberg, longtime Master Gardener volunteer
Grow Your Own, Nevada! provides horticultural information to homeowners who want to become successful backyard food producers and get on a path to more sustainable, local, healthy living. The program includes eight two-hour classes, delivered weekly in the fall and spring at 12 or more locations throughout the state. Horticulture Specialist Heidi Kratsch established the program in fall 2011 to help people discover the secrets to gardening in Nevada’s high-desert climate. Grow Your Own, Nevada! teaches horticultural principles that apply to growing various plants, tried-and-true methods from experienced gardeners, and new and alternative methods developed for growing on a small scale.

From 2011-2013:

40% gain in program-related knowledge was shown by participants

2 people reported they started businesses as local food producers because of the program

30,958 online visits for information from the program were made

3,732 people were trained through the program

Program Partners: Nevada Department of Agriculture, Local Food Network of Truckee Meadows

The Grow Your Own, Nevada! Program kicked off its 2013 series of workshops with a presentation on how to bring beneficial insects, such as bees, into your garden with native plants.

“Thank you so much for these presentations. Because we live at altitude and have a shorter growing season, your information is invaluable... I learned so much info that I can’t wait for early spring.”

– Grow Your Own, Nevada! participant
In Nevada, gardening can be very challenging. In 2009, Social Horticulture Specialist Angela O’Callaghan created Gardening in Small Places in response to public demand for good horticulture information without commitment to long-term programs. The goal was to improve horticulture practices among southern Nevada residents wanting to reduce their carbon footprint and eat more locally grown produce. Hands-on workshops are offered once a month and cover topics such as pruning, growing, troubleshooting, composting, irrigation, pest control, growing vegetables, container gardening and more. Participants may take as many classes as they wish.

“\textit{The composting workshop was very interesting. I love going home with worms.}”
– Gardening in Small Places participant

Gardening in Small Places participants are encouraged to try their pruning techniques on the fruit trees in the Cooperative Extension Outdoor Education Center demonstration garden.

\textbf{From 2009-2013:}

- 800 people participated in workshops
- 9 topics were added (went from two to 11)
- 35 workshops were held
The Greenhouse Project, a nonprofit organization, was conceptualized in 2008 among Cooperative Extension and other partners to sustainably operate a community-based greenhouse and garden, and increase agricultural and horticultural arts and sciences in Carson City. It includes a greenhouse, hoop house and small orchard; 65 raised beds; and permaculture and compost areas. The Greenhouse Project is run primarily by AmeriCorps interns, volunteers and Carson High School students, including those with special needs. It provides a place for hands-on training, emphasizing environmental stewardship, the importance of outdoor activity, civic engagement and academic achievement. Produce is mostly donated to Carson City food banks, low-income families and Carson High School’s culinary program.

“Greenhouse management, a previously foreign field for me, is now open to me, as a field of future career choices, and as an area of personal development... My general knowledge of agribusiness and the practices used by Nevada farmers has become larger than I ever anticipated.”

– Carson High School senior who participated in The Greenhouse Project

At The Greenhouse Project in 2013:

- 4,400 pounds of produce were donated to food banks in Carson City
- 375+ hours were worked by about 30 special needs students
- 1,500 volunteer hours were performed by nonstudents
- 802 students visited, including students from Carson High School, Bordewich Bray and Fremont Elementary Schools, Eagle Valley and Carson Middle Schools, and Carson Montessori School
- 3,011 student hours were put in including classes, tours and juvenile probation work

Program Partners:
Nevada Department of Agriculture, Carson City Cultural Commission, Future Farmers of America, The Greenhouse Project 501 (c) (3) corporation, Carson City School District, Nevada Division of State Parks, numerous businesses and volunteers
Since the Smith-Lever Act established the Cooperative Extension system 100 years ago to provide educational programs “to diffuse useful and practical information” via land-grant institutions, University of Nevada Cooperative Extension has been a part of Nevada life, presenting research-based knowledge and programs to address critical community needs.

If you’ve ever participated in a 4-H activity or received helpful information from a Master Gardener or a Living With Fire publication, you’ve been touched by one of University of Nevada Cooperative Extension’s more than 100 educational programs. This county-state-federal partnership provides practical education to people, businesses and communities in all 17 Nevada counties. And, the partnerships go well beyond government entities, with many other agencies, businesses and volunteers contributing to make the achievements of University of Nevada Cooperative Extension possible.

Nevada Governor Brian Sandoval asked Nevadans to join him in recognizing the achievements of this special partnership this year, sharing his experiences in 4-H as a youth in a special taped message celebrating the Cooperative Extension centennial. He also proclaimed May 8, 2014, University of Nevada Cooperative Extension Day in Nevada, and several county commissions across the state issued similar proclamations. Watch the short centennial video presentation, including the Governor’s message, at www.unce.unr.edu/about/centennial/.

Better yet, stop by your local Cooperative Extension office, say hello and find out more about what University of Nevada Cooperative Extension is doing in your community. The Cooperative Extension family appreciates the opportunity to partner with our neighbors across the state for the last 100 years to contribute to Nevadans’ quality of life in real and meaningful ways. As Gov. Sandoval concluded in his taped message, “Here’s to 100 more.”

“The 4-H Program taught me responsibility, leadership and gave me lifelong skills. In fact, it was my participation in 4-H that led me to buy my very first car – a Volkswagen bug. My brother and I spent every morning feeding and tending to our lambs.” – Nevada Governor Brian Sandoval
In 2013, Nevada’s Bootstraps Program, led by Lander County Extension Educator Rod Davis, was one of only 20 programs nationwide to receive the Partners in Conservation Award from the U.S. Department of the Interior for achievements in conservation of natural resources that include collaborative activity. (See Page 3.) Humboldt County Extension Educator Brad Schultz also received the University’s Global Engagement Award for his Range Management Training Program in Morocco. (See Page 6.) Maternal Child Health Nutrition Specialist Madeleine Sigman-Grant was also presented a Nevada Women’s Fund 2014 Nevada Women of Achievement Award. (See Page 26 and Page 30.)

University of Nevada Cooperative Extension is also the only Extension to have garnered the National Excellence in Extension Award twice since the award’s inception in 2006. The Association of Public Land-grant Universities presented the 2008 award to Nevada Youth Development Specialist Marilyn Smith, whose program efforts include Project MAGIC. (See Page 22.) The 2006 award went to Nevada Natural Resources Specialist Ed Smith, who created the internationally known Living With Fire Program. (See Page 7.) Nevada’s Extension also garnered the Association’s only other national Extension award, its National Extension Diversity Award, in 2011, for its People of the Land Program. (See Page 12.)

That land-grant institution, in fact, that most fully surrenders itself to the state and nation in a spirit of service, that institution shall truly be greatest among us.”

– W.J. Kerr, Former President of Oregon State Agricultural College, 1931, in “The Spirit of the Land-Grant Institutions” address
4-H Youth Development

4-H activities teach youth ages 5 to 19 leadership, citizenship and life skills, as well as STEM (Science, Technology, Engineering and Math). Fueled by university-backed curriculum and led by trained staff and dedicated volunteers, 4-H programs engage youth in experiential, or “hands-on,” learning. From its roots in animal and homemaking clubs in rural communities more than 100 years ago, Nevada’s 4-H now includes an array of programs in rural and urban areas for youth with various interests and needs, including project clubs in photography, performing arts, public speaking, wildlife and rocketry, to name a few. There are also general community clubs, afterschool programs, school enrichment programs enhancing learning in the classroom, programs for military families and summer camps.

It’s fantastic being a teen counselor at the 4-H camp. It’s a lot of fun. Watching the kids learn is the best experience. You know they leave knowing so much more than when they came.”

– John Singh, teen counselor at the Nevada 4-H Camp

2× girls in 4-H are 2 times more likely to participate in science, engineering or computer technology programs as their peers

2× youth in 4-H are 2 times more likely to plan to go to college than their peers

2.3× youth in 4-H are 2.3 times more likely to exercise and be physically active than their peers

3.4× youth in 4-H are 3.4 times more likely to actively contribute to their communities than their peers

Program Partners: Nevada schools, counties, fair organizations, military organizations, housing authorities, nonprofit organizations, governmental agencies and businesses too numerous to list

Alan Zhang, age 11, enjoys a tie-dying activity at Nevada 4-H Camp at Lake Tahoe. In 2013, 302 youth and 109 teen counselors and adult chaperones participated in the camp, which emphasizes character building, communication, problem-solving, decision-making, managing resources, working with others and environmental stewardship.
Leticia Servin began the ALITAS Program in 2007 in Carson City to teach middle school Latina girls communication skills, the importance of education and how to prepare for college. Since that time, 232 students have participated, meeting weekly and engaging in various activities to help them explore their heritage and self-image, build communication and teamwork skills, foster good understanding and relationships with their family members, set educational goals and identify positive role models. They also volunteer at community events, visit professional Latinas in their workplaces and hear from Latina community leaders. In addition, the teens visit the University of Nevada, Reno and Western Nevada College campuses.

“I feel that the ALITAS Program has helped me a lot to better understand how I am and what I want to do for my future.”

– ALITAS participant

From 2005-2013:

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<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
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<tr>
<td>97%</td>
<td>of participants responding to a survey (survey respondents) felt more prepared to go to college</td>
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<td>92%</td>
<td>of survey respondents improved their participation in school activities</td>
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<td>82%</td>
<td>of survey respondents improved their ability to communicate with parents and teachers</td>
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<td>99%</td>
<td>of survey respondents felt more positive about themselves</td>
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<td>80%</td>
<td>of survey respondents said the program improved their school performance</td>
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<tr>
<td>100%</td>
<td>of survey respondents either finished high school or were still in high school</td>
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Program Partners: Carson City School District; Carson Middle School; Eagle Valley Middle School; Nevada State Museum in Carson City; Boys and Girls Clubs of Western Nevada; Western Nevada College; Nevada Legislature; various community, political and educational groups and events

ALITAS Instructor Leticia Servin works with Latina students at Carson and Eagle Valley Middle Schools throughout the year to encourage student success and help them map a path to college.
“Soft” skills, including leadership, teamwork, critical thinking, problem-solving and decision-making, are considered most deficient in recent high school graduates. In 2008, Youth Development Specialist Eric Killian developed Career Edge, a workforce-readiness program, to help meet the Family and Consumer Science Standards set for Nevada high school students, increasing teens’ soft skills, their ability to acquire their first jobs and their ability to work toward long-term career goals. The program is delivered twice a week for six weeks at two Las Vegas high schools, where teens work on skills such as completing job applications, building resumes, interviewing for jobs and creating a positive work ethic.

Teaching teens skills to prepare them for entering the workforce

90% of youth participants showed significant improvement in their ability to make good decisions, solve problems, demonstrate leadership skills, fill out job applications, dress appropriately for interviews, and understand how school has a direct effect on their future career choices and success.

4,250 youth participated in the program

50% of youth obtained their first “real” paying job after participating in the program

Program Partners: Clark County School District’s Desert Pines and Spring Valley High Schools

Career Edge: Teens Taking Charge of Their Future

I learned how to properly interview for a job and how to dress.”

– Career Edge participant

Career Edge Instructor Willie Daugherty (right) works with Demarey Shumate, a sophomore at Desert Pines High School in Las Vegas.
Since 1995, Project MAGIC has helped more than 4,000 juvenile offenders across the state become productive members of society. Offenders ages 12 to 18 attend three sessions per week over two months (or 31 hours), and their parents attend 10 hours of programming to improve in: communicating; building positive relationships; decision-making/self-responsibility; managing conflict; team-building/cooperation; goal setting; and avoiding alcohol, tobacco and drugs. The participants’ measured improvement has led to: 17 states adopting Project MAGIC; it being listed on the National Registry of Evidence-based Programs and Practices; and it receiving several awards, including Program Director and STEM Specialist Marilyn Smith receiving the “National Excellence in Extension Award” from the Association of Public and Land-grant Universities.

“After MAGIC class last week when we talked about being responsible, I heard what you said about giving up on yourself. Usually I write, like, three words on my writing proficiency test and then quit. I decided that I was not going to give up on myself any more. This time, I really tried and I worked on that test for the whole 3.5 hours.”

– Project MAGIC graduate

The 116-page Project MAGIC workbook was authored by STEM (Science, Technology, Engineering and Math) Specialist and Project MAGIC Program Director Marilyn Smith, and Youth Development Specialist William P. Evans.

In 2013:

| 16 targeted program goals and life skills in which youth participants showed statistically significant improvement, including school grades, self-confidence, thinking before acting, planning for the future and 12 more important life skills |

| 127 youth participated, plus their parents |

Program Partners:
Frontier Community Coalition; PACE Coalition (Partners Allied for Community Excellence); NyE Communities Coalition; 6th Judicial Youth and Family Services; Elko Juvenile Probation; Nye Juvenile Probation; Nevada Youth Training Center; School Districts of Elko County, Nye County, Humboldt County, Pershing County and Lander County
The Child Development Associate Credential™ is the most recognized credential in early childhood education. It is based on a set of competency standards that meet Nevada’s Pre-Kindergarten Standards and guide professionals working toward becoming qualified teachers of young children. In Nevada, this credential is a requirement for employment at agencies such as Early Head Start and Head Start. Cooperative Extension does not issue the credential, but its program, directed by Early Childhood Education Specialist Teresa Byington, helps prepare individuals for approval from the National Council. The training involves 480 work hours and 120 hours of educational instruction, plus family surveys, an exam and a portfolio.

Since participation in the CDA classes, I see a confidence, more understanding of child development and an increase in social and verbal interaction. I have observed a change of knowledge.”

– a pre-kindergarten lead teacher, commenting on a colleague/program participant

All 4 Kids©, recipient of the 2012 National Institute of Food and Agriculture Partnership Award for Mission Integration, Research, Education and Extension, takes a multidisciplinary approach to childhood obesity prevention. In 2008, Exercise Physiologist Anne Lindsay, Maternal Child Health Nutrition Specialist Madeleine Sigman-Grant and Early Childhood Education Specialist Teresa Byington teamed up to develop a 24-lesson curriculum for preschoolers incorporating learning activities, music and dance to teach nutrition, physical activity and self-acceptance. The program includes discussions with parents and staff to enhance their understanding of these issues, training for preschool staff, and take-home activities to reinforce concepts. Preschoolers have shown statistically significant improvement in movement skills after program participation.

“The All 4 Kids Program has even helped me make healthy eating choices. It’s great that the children and their families have this information.”
– All 4 Kids teacher participant

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<thead>
<tr>
<th>From 2005-2013:</th>
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<tr>
<td><strong>1,193</strong> preschool children and parents participated in All 4 Kids in Clark County with 84 percent being from underrepresented groups</td>
</tr>
<tr>
<td><strong>38,700</strong> people viewed the award-winning CD/DVD on YouTube</td>
</tr>
<tr>
<td><strong>36</strong> All 4 Kids family events were held in Clark County, including two communitywide Healthy Kids Festivals</td>
</tr>
<tr>
<td><strong>10,000</strong> copies of the award-winning CD/DVD were distributed</td>
</tr>
<tr>
<td><strong>3</strong> states have replicated the program (New Jersey, Oklahoma and Connecticut)</td>
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**Program Partners:**
- U.S. Department of Agriculture Supplemental Nutrition Assistance Program – Education, Acelero Learning
- Clark County, Clark County School District, Family to Family Connection, Clark County Parks and Recreation

All 4 Kids Program Instructor Nichol Tullis teaches “Ven Conmigo,” a salsa dance, at Paradise Recreation Center in Las Vegas.
The Nevada Radon Education Program educates Nevadans about the health risks of radon, the leading cause of lung cancer among nonsmokers in the U.S. Radon is a naturally occurring, odorless, tasteless and colorless radioactive gas that can accumulate in buildings and homes. Testing is the only way to determine if a home has a problem. The only way citizens learn about the risk is through education. Susan Howe leads the program’s efforts to help educate Nevadans by providing low-cost test kits, information, technical assistance, programs, presentations and literature.

“I was privileged to collaborate with the Nevada Radon Education Program. The specific resources and knowledge I gained from the program were invaluable during my recent home purchase and in testing my home’s mitigation system.”

– Shanna Keele, former Reno resident

**From July 2007-2013:**

- **14,972** homes were tested because of the program’s efforts to raise awareness
- **30,628** short-term test kits were distributed by the program
- **145** new Nevada homes were built radon-resistant
- **1 in 4** Nevada homes that were tested had potentially hazardous radon levels
- **613** homes were mitigated to reduce radon levels

**Program Partners:** U.S. Environmental Protection Agency, Nevada Division of Public and Behavioral Health, American Lung Association in Nevada, Incline Village Recreation Center, Nevada Tahoe Conservation District, Tahoe Regional Planning Agency, Washoe County Library System, Clark County Library District, Grassroots Books
Chefs for Kids is a nutrition education program for children in Washoe and Clark County schools with 50 percent of students who are low-income. It is partially supported by the American Culinary Federation Chefs Las Vegas and directed by Maternal Child Health Nutrition Specialist Madeleine Sigman-Grant. It includes a six-part first-grade curriculum and a 38-lesson second-grade curriculum. First-grade lessons introduce concepts of energy and activity, food origins, food groups and healthy snacking. Weekly second-grade lessons focus on the origin and use of food, the need for food, and how physical activity lowers the risk of developing chronic diseases, including obesity.

“My sister used to just eat junk, but then I learned about healthy food and how to make a good snack. Now I can help her to be healthy cause I can make healthy snacks for her to eat.”

– Johanna, second-grade student, at C.P. Squires Elementary School, who participated in Chefs for Kids

In 2013:

8.07 was the average score of first-grade students on the test after program participation, compared to an average score of 6.1 on the test prior to program participation (on a scale of 1 to 10)

94 was the average score of participants on a food classification evaluation (out of 100)

91.5% of students assessed after program participation were able to list at least two activities that would be considered part of an “active lifestyle”

84% of students assessed for hand-washing skill after program participation responded with no errors

61% of student participants improved snack choices over the school year

Program Partners: Clark County and Washoe County School Districts, Chefs for Kids Foundation, American Culinary Federation Chefs Las Vegas, U.S. Department of Agriculture Supplemental Nutrition Assistance Program – Education, Share Our Strength, Cambridge Recreation Center, MGM Resorts International

A student participating in Chefs for Kids at Lois Craig Elementary School in North Las Vegas enjoys a pluot.
The first six years of life have a significant effect on children’s development, and parents play the most important role during this time. Parenting and Child Development Specialist YaeBin Kim developed the Little Books & Little Cooks Program for preschool children and their parents to address the priorities of school readiness, healthy eating, parent-child interaction and literacy. In the seven-week program, each week children and parents at 30 southern Nevada schools, libraries and community centers learn about healthy eating and nutrition, gain positive parent-child interaction skills, and practice school readiness skills by reading children’s books about healthy eating and by cooking and eating together.

**In 2013:**

88% of parents consumed more fruits and vegetables after participation

81% of children consumed more fruits and vegetables after participation

75% of parents demonstrated more positive parent-child interaction during cooking after participation

**Program Partners:**

U.S. Department of Agriculture Supplemental Nutrition Assistance Program – Education; Clark County School District; Acelero Head Start Centers; North Las Vegas, Las Vegas and Henderson Libraries; University Medical Center Family Resource Center; various community recreation centers

In 2013:

88% of parents consumed more fruits and vegetables after participation

81% of children consumed more fruits and vegetables after participation

75% of parents demonstrated more positive parent-child interaction during cooking after participation

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“I really love this program; I definitely wish to have this program next year so I can bring my other son. Everything is really good. Kids and parents learned together.”

– Little Books & Little Cooks parent participant
Since 2006, Small Steps 4 Big Changes has provided nutrition education to low-income youth and their families in Reno Housing Authority public housing complexes, including Mineral Manor, Myra Birch, Essex, Stead Manor and Hawkview. The program, directed by 4-H Youth Development Coordinator Sarah Chvilicek, offers a series of 10 nutrition lessons twice a year, focusing on thriving within a limited budget and increasing fruit and vegetable intake. The lessons incorporate recipe preparation, food sampling and physical activity, with additional nutrition education for parents and caregivers. The program fosters behavior changes identified by the Centers for Disease Control as being linked to obesity prevention.

In 2013:

92% of youth participants were able to identify and correctly name all five food groups on the MyPlate model created by the U.S. Department of Agriculture

91% of youth participants were doing at least 30 minutes of exercise two or more times a week

56% increase was shown in youth participants’ willingness to sample new fruits and veggies

85% of youth participants were able to identify and correctly name all five food groups on the MyPyramid model created by the U.S. Department of Agriculture

80+ people participated in the program

Program Partners: U.S. Department of Agriculture
Supplemental Nutrition Assistance Program – Education, Reno Housing Authority

“I was really shocked to learn how much sugar that was in certain drinks and foods. It made me look at what drinks I am putting in my body. I also learned what fruits and vegetables do for my body and health.”

– Small Steps 4 Big Changes teen participant

Good Agricultural Practices

University of Nevada Cooperative Extension promotes food safety through various projects. Good Agricultural Practices (GAP) training, begun in June 2013 under White Pine County Extension Educator Seth Urbanowitz, offers workshops to Nevada’s farmers and others, teaching safe production and handling practices for produce growers. After attending the training, participants may go through a process to be certified one year under the GAP certification. Many schools, restaurants and retailers that purchase local food require producers to be certified. Cooperative Extension Dean Mark Walker also serves on the Council on Food Security for the State of Nevada, created to improve the quality of life and health of Nevadans by increasing food safety.

In 2013:

- **88** people were trained by the Good Agricultural Practices Program, including not only farmers, but also public health officials and representatives from schools, nonprofits and agricultural agencies.
- **86%** of participants planned to use the technical training they learned from the program.
- **100%** of participants improved their knowledge of Good Agricultural Practices principles and produce safety.

**Cooperative Extension offers trainings and resources, such as Good Agricultural Practices, to help keep produce healthy and safe.**

“*The Good Agricultural Practices trainings put consumers at ease and help growers get into schools and new markets because the growers use the practices to learn to keep the food they produce safe.”*

— Ashley Jeppson, Nevada Department of Agriculture Farm-to-School grant coordinator

**Program Partners:** U.S. Department of Agriculture Food and Nutrition Service Farm-to-School Grant Program, Nevada Department of Agriculture, Nevada Division of Public and Behavioral Health
Breastfeeding Support, Promotion and Protection

Under the umbrella of Breastfeeding Support, Promotion and Protection lies Breastfeeding Basics, for pediatric, obstetric and family practice residents at University of Nevada School of Medicine; Lactation 101, a three-part lactation class for nursing staff; and Mom’s Special Gift, for pregnant and postpartum Medicaid-eligible women. The long-term goal is to create a supportive breastfeeding environment. Short-term goals include increasing breastfeeding knowledge, changing attitudes and practices, encouraging breastfeeding initiation, and extending breastfeeding duration. Since Maternal Child Nutrition Specialist Madeleine Sigman-Grant began Breastfeeding Basics and Lactation 101 in 2004, significant increases have been noted in knowledge, intention and confidence by 1,000-plus health professionals completing course evaluations.

My teacher has explained many things to me, such as nutrition for both my child and I and how my eating not only affects myself but my child. I thank my teacher for helping me know I am fully capable of taking care of a child now.”

– Theresa Noss, Mom’s Special Gift participant

In 2013:

883 women were educated over the phone and provided follow-up until breastfeeding stopped or up to six months after Mom’s Special Gift Program completion

9,500 fact sheets were requested by community agencies for pregnant and breastfeeding women

712 health care professionals and community members were taught Lactation 101

721 women received lactation education in 108 classes taught by bilingual instructors

900 referrals were received from University Medical Center in Las Vegas

Program Partners: Alternatives for Women and other OB/GYN private practices; The Breastfeeding Task Force of Nevada; state and local WIC agencies; University of Nevada School of Medicine Pediatric, Obstetric and Family Practice Residency Programs; Kids Health Pediatrics and other private pediatrics practices; Sunrise Hospital; University Medical Center; University Women’s Center; Centennial Hospital; Spring Valley Hospital; Southern Nevada Breastfeeding Coalition; St. Rose Dominican, Siena; St. Rose Dominican, San Martin

Educating health care professionals and nursing moms for healthier babies
Stronger Economies Together (SET) is a collaborative strategic planning program helping rural communities work together regionally to form economic development plans based on regional current and emerging economic strengths. It was launched nationally by the U.S. Department of Agriculture Rural Development and the Regional Rural Development Centers. In Nevada, University of Nevada Cooperative Extension and the University Center for Economic Development have helped lead the effort, focusing on the Western Nevada Development District (WNDD), including Carson City, Churchill, Douglas, Humboldt, Lander, Lyon, Mineral, Pershing and Storey Counties. Several Cooperative Extension specialists and educators participated in the process and workshops.

“My number one goal for this effort was to create a habit of collaboration across this region. That has been achieved and much more. We now have a pragmatic plan for sharing strengths to create economic growth across the region.”

– Sarah Adler, state director of U.S. Department of Agriculture Rural Development on the completion of SET’s “Economic Development Blueprint for Western Nevada”

The National Association of Development Organizations presents a group from the SET team and the Western Nevada Development District a 2012 Innovation Award, recognizing their creative approaches to regional community and economic development. Left to right: Tom Harris, Ron Radil, Steve Lewis, Sarah Adler, Michael Guss, Richard Tremblay.

From 2012-2013:

220 SET training hours were delivered, a process that guides the development of practical regional economic development strategies

10 SET workshops were held, one in each county, plus a final workshop/presentation

Program Partners: U.S. Department of Agriculture Rural Development; Nevada Governor’s Office of Economic Development; Western Nevada Development District; University Center for Economic Development
The number of small-scale, specialty or “niche” farmers and producers in Nevada is increasing. These farmers who may be growing heirloom tomatoes and eggplant for high-end restaurants, for example, need to consider different factors for business success than Nevada’s traditional, larger-scale farmers, such as alfalfa growers. The Beginning Farmer and Rancher Financial Mentoring Program is a collaboration of University of Nevada Cooperative Extension and the University Center for Economic Development to help all Nevada’s agricultural producers develop budgets specific to their enterprises. Enterprise budget workshops are incorporated into other educational programs, such as Herds & Harvest, and one-on-one mentoring is also provided to help producers map a path to success.

**From 2011-2013:**

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<tr>
<th>212</th>
<th>51</th>
<th>30%</th>
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<td>Herds &amp; Harvest program participants were instructed during 32 classes on the development and use of enterprise budgets</td>
<td>producers were mentored to develop personalized enterprise budgets for their specific agricultural enterprises</td>
<td>of Herds &amp; Harvest participants reported that enterprise budget development was the most useful part of the program</td>
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**Program Partners:** U.S. Department of Agriculture National Institute of Food and Agriculture, Farm Service Agency and Risk Management Agency; University of Nevada, Reno College of Business and University Center for Economic Development
Unmanned Aerial Systems (UAS), or drone, research is being conducted by faculty from Cooperative Extension as well as the Colleges of Engineering; Science; and Agriculture, Biotechnology and Natural Resources, in collaboration with Drone America, a Reno-based company. Cooperative Extension Dean Mark Walker is particularly interested in exploring UAS use for wildfire hazard assessments and suppression, wildlife habitat surveys, vegetation assessments and environmental mapping. With its open spaces and clear skies, Nevada is a prime candidate to develop the UAS industry. In November 2013, Cooperative Extension led a statewide UAS Development Workshop with the Governor’s Office of Economic Development and the University Center for Economic Development, bringing together interests to promote the industry. See below.

**In 2013:**

97.3% of participants responding to the workshop survey said they would be willing to attend future, more intensive workshops on UAS development in Nevada.

104 people participated in the UAS Development Workshop, including faculty from several Nevada System of Higher Education institutions, government officials and executives, and leaders of Nevada’s business community.

11 sites throughout the state were used by participants tuning in to the workshop, via Cooperative Extension’s interactive video system and offices.

**Program Partners:** Drone America; University of Nevada, Reno Colleges of Engineering, Science, and Agriculture, Biotechnology and Natural Resources; University Center for Economic Development; Nevada Governor’s Office of Economic Development.

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“We think drones can help us gather large-scale data to assist with management of natural resources cheaper, better and faster than current methods.”

– Cooperative Extension Dean Mark Walker
Alternative Crops and Forage Specialist Jay Davison was receiving multiple inquiries about growing perennial grasses as a low-water-use biofuel crop in cold desert climates. So in 2007 and 2008, he planted four cool-season and five warm-season grasses in Nevada's Mason Valley, watering them with three different regiments – 50, 75 and 100 percent of normal. Working with Elizabeth Leger, associate professor at the College of Agriculture, Biotechnology and Natural Resources, and other colleagues, he concluded the six-year project with published research in ScienceDirect’s July 2014 issue. Although some cool-season varieties may be worthy of future study, the research showed that currently, perennial grasses would not save water and would be less profitable for farmers. In addition, the yields of the perennial grasses were less than or equal to that of the average yields of alfalfa.

“None of them make any sense. They don’t save any water, and they are worth maybe a third of what our normal alfalfa crops are worth. You’re going to be asking a farmer to grow something that will produce the same amount or less, and he’ll get a third of the price for it, if he can find a market for it.”

– Cooperative Extension Alternative Crops and Forage Specialist Jay Davison, commenting on growing perennial grasses as a low-water-use biofuel crop today

From the 2007-2014 research project:

**Triple**

The amount by which alfalfa prices currently exceed prices for perennial grass biomass in most locations

| 2 | of the nine tested varieties that may be worthy of future research |

**Program Partners:** University of Nevada, Reno College of Agriculture, Biotechnology and Natural Resources and research paper coauthors Lauren M. Porensky, Elizabeth A. Leger, W. Wally Miller, Erin M. Goergen, Erin K. Espeland, Erin M. Carroll-Moore; two ranches in Mason Valley

Biomass grown for the study on two acres in western Nevada’s Mason Valley is harvested.
Almost immeasurable, moreover, is the educational value of the great extension program of the land-grant institutions. Their program involves adult education in practically all fields, as well as a large number of practical projects for boys and girls. These extension organizations have developed a contact with life and a technique for service that has greatly facilitated the inauguration of many agencies for rural welfare and civic betterment.”

– W.J. Kerr, Former President of Oregon State Agricultural College, 1931, in “The Spirit of the Land-Grant Institutions” address

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