



THE UNIVERSITY OF ARIZONA

Cooperative Extension

University of Arizona

Greenlee County Cooperative Extension

2023 Annual Report

Cooperative Extension

Cooperative Extension enjoys a rich and proud history in this country. On May 8, 2014, we celebrated our 100th year of the Smith-Lever Act, which established the Agricultural Extension Service, known today as Cooperative Extension. Cooperative Extension is a unique educational partnership between the U.S. Department of Agriculture, the nation's land grant universities, and the county governments that extends research-based knowledge through a state-by-state network of extension educators. Working together, we recognize that we achieve much more than we can alone. While the authors of the enabling legislation for Cooperative Extension could not foresee the future, the mandates implicit within the legislation is as applicable today as in 1914:

- **Serve Agriculture and the Public** - The Smith-Lever Act gave Extension a very broad clientele base—"the people of the United States"—yet also specified that its programs should be concerned with "agriculture and home economics and subjects relating thereto."
- **Define Agriculture Broadly** - The term "agriculture" was used in a comprehensive sense in the Smith-Lever Act and subsequent legislation to include producing, processing, and marketing farm and forest products, plus those businesses and industries concerned with supplying the resources needed in the production and marketing process.
- **Enhance Human Development** - The underlying mandate is to provide educational programs for individuals and families, which will enhance human development and maximize the individual's contribution to society.
- **Meet Local Problems** - Section 8 of the Smith-Lever Act establishes the need for additional assistance in areas faced with special or unusual hardships and acknowledges Extension's role in

working with groups as well as individuals in meeting local problems.

At the heart of Cooperative Extension is the deep-rooted belief that engaging people through applied research and education will improve the quality of their lives, communities, and the economy. This mission is the driving force behind 100 years of Cooperative Extension in Arizona. Our ability to be relevant in the years to come is based on our ability to listen and respond to our "customers"--the people in our communities. We value our partnerships and believe community voices are critical to success.

Today, Cooperative Extension continues its important role, serving communities and families, supporting agriculture, and empowering youth to be leaders. Regardless of the program, Extension expertise meets public needs at the local level through the involvement of volunteers, partners, stakeholders, and advisory committees. Extension would not be what it is today without their dedication and service. We are most grateful for their willingness to be partners in our journey to improve lives, communities, and economies.

We look forward to working with you, as together we create the next chapters of our continuing history!



The University of Arizona Cooperative Extension represents a unique three-way partnership of the federal, state and county government to provide access to the Land Grant University System to local citizens. Partners include the United States Department of Agriculture, the University of Arizona, and Greenlee County Government. Regardless of the program, Extension expertise meets public needs at the local level through the involvement of volunteers, stakeholders, and advisory committees. Our roots in communities help us understand local needs and put university expertise and connections where they can make a difference - both in people's lives and in their livelihoods. Increasingly, Extension serves a growing, more diverse constituency with fewer resources, utilizing methods that are timely, relevant, and cost-effective. These Extension-driven programs leverage and multiply each dollar of county and state support with additional outside funding. Arizona Cooperative Extension generates a return on investment of \$4.87 for every \$1 the State of Arizona invests. Included in this report are a few highlights of Extension's impact on this county and its people during 2023.

Cooperative Extension, Greenlee County Faculty and Staff

Amanda Blake, AmeriCorps Member (Jan-Apr)
Nate Brawley, Assistant Area Agent, Livestock
Jonie Burge, Business Manager
Bill Cook, Program Coordinator Sr, Horticulture
Jackie Hale, AmeriCorps Member
Kim Johnson, Instructional Specialist, STEM
Ashley Menges, Assistant Agent, 4-H Youth Development/Family, Consumer, and Health Sciences
Kim McReynolds, County Extension Director & Area Agent, Natural Resources
Savanna McReynolds, AmeriCorps Member
Dusty Murdock, Administrative Assistant
Britta Schnebly, Program Coordinator, AZ Health Zone
Anita Thompson, Assistant Area Agent, Range
Connie Waddell, AmeriCorps Member

Our Mission

To engage with people through applied research and education to improve lives, families, communities, the environment, and economies in Arizona and beyond.

Our Vision

To be a vital national leader in creating and applying knowledge to help people build thriving, sustainable lives, communities, and economies.

Greenlee County Cooperative Extension Advisory Board

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Office Location

1684 Fairgrounds Road
Duncan, Arizona 85534
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Greenlee County 4-H creates developmental experiences for youth so that they become resilient, competent, and contributing citizens of our communities. Our program serves youth ages 5 to 18 through participation in clubs, specific project areas, educational and social events, service, and career exploration. Competitive opportunities arise at a county, state, and national level. The 4-H program is delivered through the traditional club program model as well as through in school programming.

Because of the Greenlee 4-H Youth Development Program,

- *Greenlee 4-H youth members say that 4-H provides opportunities to develop life skills such as independence and confidence that will benefit them throughout their lives.*
- *The 4-H program began throughout the country in response to young people and their need for better agricultural education.*
 - *Currently 1 Agriculture Literacy First Reader Book is being created and published titled "Amazing A-to-Z Adventure."*
 - *15 Lessons were developed around Specialty Crops in Arizona.*
 - *Greenlee County Cooperative Extension held their 2nd National Agriculture Day program.*
- *As a result of the 4-H program participants feel they have a supportive environment to try something outside of their comfort zone, explore new things, and find inspiration for future educational or career choices.*
 - *91% of youth who participated in state or national travel have stated that they learned about a new educational or career choice during their trip.*
- *4-H members identify with being comfortable speaking in front of groups.*
 - *Each 4-H member who shows at the county fair is required to do a demonstration. This year we had 34 members deliver their demonstration in front of their peers, volunteers, and parents.*
- *Year-end evaluations showed that over 80% of 4-H members feel that they can identify ways to meet their community's needs.*
 - *Community Service allows members to enhance their understanding for civic leadership.*



2023 – BY THE NUMBERS

- ▶ 57 youth participated in Greenlee County 4-H clubs.
- ▶ 10 certified adult volunteers.
- ▶ 76 Greenlee Teens participated in the GEAR UP Program.
- ▶ Volunteers donated 475 hours of their time, worth \$14,312.
- ▶ 3 Greenlee members participated in the National 4-H Livestock Judging Contest.

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Science, technology, engineering, and math (STEM) programs are comprehensive lessons that engage students. STEM disciplines are significant influences for innovation and development, resulting in modern technology and advances that improve our daily lives. STEM programs benefit students by showing real-world applications, incorporating hands-on learning, developing critical thinking and innovation, providing unique opportunities for teamwork, and sparking interest in future careers.

Because of the Greenlee STEM Program,

- STEM offers students the opportunity to solve a problem with tools and knowledge, and then analyze the outcome together. Experiments and tests don't always yield the expected results. In 2023, 4th grade classes at Metcalf Elementary engaged in 8 different lessons tied to the Arizona Science Standards. One example: During the hazardous weather and natural disaster unit, students



Youth built a tower to withstand wind created by a large box fan to simulate hurricane winds. This was the first winning tower.

They were exposed to engineering design principles. They were asked to build a tower with specific measurements that could not be knocked over by a box fan blowing at high speed to simulate hurricane winds. Teams were given the same materials. At the first testing phase 20% of teams passed the test. Those who did not pass were sent back to revise their plans and adjust their towers. At the final testing phase over 80% of students' towers were able to resist the force of the fan.

- STEM themed camps during the school breaks are offered at both Duncan and Clifton public libraries. Examples are Spy Camp, Lego Mindstorms, 3D design and printing, and other seasonal STEM activities.



Youth participate in the 3-D Design Challenge over Spring Break at the Clifton Library.

2023 – BY THE NUMBERS

- ▶ **23** Duncan youth and **21** Clifton/Morenci youth participated in STEM activities at our public libraries during Spring, Summer, and Fall breaks. **8** Duncan, youth ages 3-6, participated in specialized activities for preschool and kindergarten aged participants. **17** participants from both libraries learned advanced math concepts creating ciphers and cracking secret codes during summer spy camp. **3** youth took the 3-D Pen Design Challenge at the Clifton Library during Spring Break.
- ▶ **124** 4th graders participated in **8** unique, hands-on, science standard lessons in the classroom, such as building and testing an electromagnet. Students were also challenged with engineering concepts to build a structure out of cardboard to withstand hurricane force winds. **80%** of students passed the challenge.

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Horticulture, specifically home gardening education, was identified as a need in 2011. This program helps to educate participants on a wide variety of horticultural topics including plant selection, pest identification, watering and irrigation systems, and general horticultural concerns. Associate Master Gardeners agree to volunteer time back to the program through a variety of opportunities.

Because of the Greenlee Horticulture Program,

- *Area gardeners who participated in gardening classes and online instruction now have the knowledge and skills to properly care for their gardens and trees.*
- *Students in the Duncan Unified School District learn how to grow vegetables and graft fruit trees that are planted at the different school sites, the County Annex, and homes. High School Agriculture students learned to use and maintain a greenhouse to grow plants for the gardens and to sell as a fundraiser in support of school programs. Plants are sold primarily for FMI Earth Day events in Morenci, Duncan, and San Carlos.*
- *AmeriCorps members provided assistance to the seed libraries, school programs, online content development, and in preparation of monthly gardening classes.*
- *Production of many gardening videos that are posted to YouTube have increased the availability of educational opportunities for people who are not able to make classes in-person, as well as to supplement classroom presentations.*
- *Monthly newspaper articles disseminate gardening information to county residents.*



2023 – BY THE NUMBERS

- ▶ **894** Horticultural inquiries were provided gardening information.
- ▶ **761** Volunteer hours were recorded by **78** adult and **80** youth, valued at **\$22,929**.
- ▶ Structured lessons were delivered to **426** adults and **1,109** youth.
- ▶ **110+** YouTube videos had **48,219** views during the year.
- ▶ **260** Duncan Elementary, Duncan Headstart, and Metcalf Elementary students learned about pumpkins at the Annual Pumpkin Patch Day held at the Extension Office.

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AmeriCorps Members
Amanda Blake Jackie Hale
Savanna McReynolds Connie Waddell

Livestock production is economically important in Greenlee County. According to the Greenlee County Agricultural Economic Impact Study done in 2020 by the University of Arizona, Greenlee County “Is a livestock-dominant county by value of sales, with 75% of county agricultural cash receipts from livestock”.

Because of the Greenlee County Livestock Production Program,

- *Nutrition Workshop and Ranch Rodeo -350 Attendees to the rodeo and great information on nutrition presented by Purina, Merck, and Zinpro.*
- *Range/Livestock Statewide Workshop – Producers listened to industry professionals about the latest technology available to them, along with trace minerals, vaccination protocols, and proper nutrition.*
- *Artificial Insemination Clinics – 3 clinics offered. 2 in Northern Arizona and 1 in Southern Arizona serving 40 participants.*
- *University of Arizona Cooperative Extension Range and Livestock Newsletter – Quarterly newsletter highlighting past/future events as well as articles on pertinent topics to producing cattle in Arizona. Statewide circulation: 134 email contacts and 336 hard copy paper mailings.*
- *Assisted in Multiple ALIRT responses in Southern Arizona.*
- *AZCOWS Workshop Series.*



2023 – BY THE NUMBERS

- ▶ Assisted **10** ranches representing **1,600** head of cattle with livestock production issues including corral design changes, hay sampling for toxic plants, and Arizona Livestock Incident Response Team (ALIRT) calls.
- ▶ Artificial Insemination Clinic (V-V Ranch) – **24** participants learned about cattle reproduction systems and how to properly palpate and synch cows for breeding.
- ▶ Artificial Insemination Clinic (Santa Rita Experimental Range) – **16** participants learned about cattle reproduction systems and how to properly palpate and synch cows for breeding.
- ▶ Assisted in the **8** workshop series where the cohort of students learned the basics of cattle ranching in Arizona throughout the year.

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The Supplemental Nutrition Assistance Program-Education (SNAP-Ed) under the direction of AZ Health Zone and in partnership with the UA Cooperative Extension offers opportunities for individuals and families to increase their knowledge about healthy nutrition, gardening education, and creating a physically active lifestyle. These opportunities help to provide Greenlee County residents an overall sense of well-being.

Because of the Greenlee County Nutrition, Gardening, & Physical Activity Program,

- *In-person visits were held at Duncan Head Start and Duncan Elementary School grades K-5. This year marked the second successful peanut harvest by the 2022-23 kindergarten students, with seeds planted from the previous year's harvest. Other grades participated in gardening by planting corn, broccolini, and peas in the journey to create a sustainable school garden plan, including seed-saving, at the Duncan Elementary School. Curricula used with each grade are designed to increase participants' knowledge in nutrition, gardening, and physical activity.*
- *The Kids' Cooking Club summer program, which promotes nutrition and cooking education for youth ages 6-12 in the Duncan/York community in cooperation with public libraries, continued to be a success. For 2023, the potato was the featured vegetable. In addition to searching for potatoes (grown locally in grow bags), the participants learned to make cheesy broccoli smashed potatoes and a mayonnaise-free potato salad. Kids' Cooking also expanded to include a storytime cooking class for youth participants ages 3-5.*
- *Adults had opportunities to join in on cooking class fun. The Duncan Public Library obtained a grant sponsored by AHEAD AZ, UA Center for Rural Health, AZDHS, and the CDC to combine book reading and cooking in a program entitled, "Feed the Body, Feed the Mind." Currently the program is in its second round, as the library staff were able to obtain the grant for a second time. The first series of food and books, focused on a five-course meal, one course per month from Jan-May 2023. The second series is focusing on cuisine and literature from around the world and began October 2023 and will conclude in May 2024.*



*Peanut harvest 2023,
Duncan Elementary
(pictured Naomi
Donaldson)*



*Potato Picking, 2023
Summer Kids' Cooking
(pictured Charlie Jean
Sanchez)*

*Turkey Sandwich, Kids'
Storytime Cooking*



2023 – BY THE NUMBERS

- ▶ **10** nutrition info sheets and **26** recipes provided to **90-120** food bank recipients in 2023.
- ▶ **16** gardening activities at Duncan Public Schools (grades K-5), **172** students.
- ▶ **5** Kids' Cooking Club Day Camp sessions, **45-50** youth participants (ages 6-12).
- ▶ **4** adult cooking/nutrition program opportunities ("Feed the Body, Feed the Mind" classes and food preservation workshops), **95-100** participants (combined from all programs).

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Rangelands are important to society for the goods and services they produce and for the ecological services they provide. There is a need to balance livestock grazing with natural resources. This is especially important as livestock producers have been reducing and managing herds as a result of drought conditions for the last two decades. Workshops are held that teach various subjects relating to rangeland management, monitoring, livestock nutrition, and other identified needs requested by clientele. Work is done collaboratively at both the local and state levels in partnership with ranchers, US Forest Service (USFS), and Natural Resources Conservation Service. Ranches are monitored for long-term soil and vegetation trends.

Because of the Greenlee County Rangeland Management Program,

- *Ranchers and land management agency personnel have a better understanding of rangeland management and monitoring.*
- *Long-term rangeland monitoring data is available for USFS permittees and private/state land lessees to use in management decisions, and for federal employees to use in resource analysis.*
- *Healthy rangelands support livestock production, wildlife habitat, and other natural resource benefits for society.*



Reading and recharging a remote rain gauge on 4 Bar Mesa.

2023 – BY THE NUMBERS

- ▶ 17 Sites on 4 USFS allotments were monitored. Monitoring reports were prepared for each allotment and given to agencies and ranchers.
- ▶ An additional **\$83,000** was obtained in a grant to support the monitoring program in southeastern Arizona.
- ▶ Read and recharged **8** remote rain gauges from Duncan to south of Alpine twice during the year and input data into my RAINge log (<https://myraingelog.arizona.edu/>).

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The spread of state and federally listed noxious weeds on public, state trust, and private lands threatens biodiversity and native plant species, decreases forage and habitat for domestic and wild animals, and causes economic hardship for landowners. Invasive species in the United States are estimated to cause damages of \$137 billion annually, with non-native invasive weeds making up \$34 billion of that amount (Montana State University, Extension Agricultural Economics). Southeastern Arizona has relatively small infestations of noxious weeds compared to other areas in the West. This continues to give us a unique opportunity to be proactive and control weeds so that it doesn't become economically prohibitive. There are significant infestations of Russian Knapweed, Whitetop, Yellow Starthistle, Malta Starthistle, and Sandbur in Greenlee County.

Because of the Greenlee County Noxious Weed Program:

- *Landowners who attend a workshop or watch a video are able to identify noxious weeds that are growing in the county.*
- *Participants are trained in the proper treatment and disposal of noxious weeds, including sprayer calibration, and complying with herbicide labels.*
- *Coordinated community efforts will reduce the number of acres infested with noxious weeds.*



Duncan High School students monitoring Russian Knapweed in the school's ag field.

2023 – BY THE NUMBERS

- ▶ 1 noxious weed workshop was held in the Spring.
- ▶ 1,970 acres inventoried and monitored for targeted noxious weeds.
- ▶ 26 cooperators treated 1,550 acres of noxious weed infestations.
- ▶ 2 grants implemented: 1 for research and 1 for an Integrated Weed Management Demonstration Area at Duncan High School.
- ▶ 15 students monitored Russian Knapweed 18 times to look at treatment effectiveness.
- ▶ 1 grant awarded for \$18,259 to treat Sandbur.

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YouTube: <https://www.youtube.com/channel/UC9yQoIdTyDWXuUt5yahS0LQ>
(or search for UACE Greenlee County YouTube)

Contact Us



Make a Donation

We are pleased to offer a variety of ways that you can make your gift to Cooperative Extension and to the Greenlee County office. If you have questions or would like to make your gift by telephone, please contact the CALS Development Office at 520-621-7190.

There are a variety of ways to give, including:

Online Giving - All tax-deductible charitable donations are processed through the University of Arizona Foundation. Donations can be made at <https://extension.arizona.edu/give>. Be sure to indicate which program and/or county office should be credited with your donation. You can pick the county and then later in the process have the opportunity to specify what program in the comments section.

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