

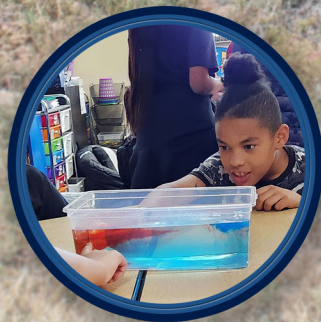
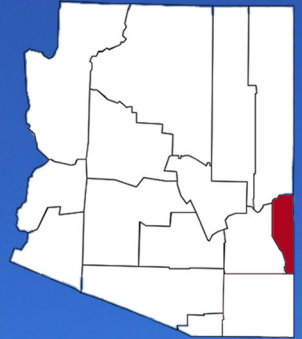


THE UNIVERSITY OF ARIZONA
Cooperative Extension

University of Arizona

Greenlee County Cooperative Extension

Improving Lives, Communities, & the Economy



Annual Report 2022

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. Included in this report are a few highlights of Extension's impact on this county and its people during 2022.

Cooperative Extension, Greenlee County Faculty and Staff

Amanda Blake, AmeriCorps Member

Nate Brawley, Assistant in Extension, Animal Production Systems

Jonie Burge, Business Manager

Bill Cook, Program Coordinator Sr, Horticulture

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

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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.

Our Values

Integrity – Be honest, respectful, and just.

Exploration – Be insatiably curious.

Inclusion – Harness the power of diversity.

Adaptation – Be open-minded and eager for what's next.

Determination – Bear Down!

Compassion – Choose to care.

Greenlee County Board of Supervisors

Richard Lunt, Chairman

David Gomez, Vice-Chairman

Ron Campbell, Member

Derek Rapier, County Administrator

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◀◀◀ 4-H Youth Development ▶▶▶

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.*
 - *5 Agriculture Literacy First Reader Books were published and distributed.*
 - *Greenlee County Cooperative Extension held their first 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.*
 - *82% of youth who participated in state or national travel have stated that they learned about a new educational or career choice during their trip.*
 - *The GEAR UP program provided instruction to 47 Morenci and 23 Duncan High School Students. They were taught disaster preparedness through hands-on opportunities and information about first responder careers.*
- *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 31 members deliver their demonstration in front of their peers, volunteers, and parents.*
- *Year-end evaluations showed that over 72% of 4-H members feel that they can identify ways to meet their community's needs.*
 - *The county program participated in 4 in-person service projects which provided members the opportunity to give back to their communities.*



2022 – BY THE NUMBERS

- ▶ **54** youth participated in Greenlee County 4-H clubs.
- ▶ **12** certified adult volunteers.
- ▶ **70** Greenlee Teens participated in the GEAR UP Program.
- ▶ GEAR UP: **82%** of participants found the program to be very valuable, and 35% are more interested in a first responder career.
- ▶ Volunteers donated **425** hours of their time, worth **\$13,671**.

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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 2022, 4th grade classes at Metcalf Elementary engaged in 10 different lessons tied to the Arizona Science Standards. One example: Students were exposed to the scientific method and received a box of ingredients including baking soda, vinegar, cola, sprite, mentos, and lifesavers. They hypothesized which would have the biggest reaction. 90% of the students chose the cola and mentos combination because of videos they had seen. The baking soda and vinegar turned out to have the biggest*



Youth build Lego Mindstorms EV3 robots and use coding to program them to accomplish tasks. Duncan Public Library, Summer 2022.

reaction. After discussions of the results, they discovered it was the shape of the vessel (which was a regular plastic cup) that was used to contain the reaction. The video combined the mentos into a 2-liter cola bottle and showed sky high explosions aided by the narrow neck of the bottle. The plastic cup did not allow the carbonation to build up. Students learned how variables can change results.

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



Metcalf students mix baking soda and vinegar to assess the chemical reaction. December 2022.

2022 – BY THE NUMBERS

- ▶ **29** Duncan youth and **36** Clifton/Morenci youth participated in STEM activities at our public libraries during Spring, Summer, and Fall breaks. **10** Clifton Public Library youth created Halloween themed cookie cutters with a 3D printer.
- ▶ **118** 4th graders participated in **8** unique, hands-on, science standard lessons in the classroom, including a nationwide project called Tomatosphere™.
- ▶ **23** 4th graders piloted **2** test lessons to supplement the regular science standard based lessons offered.
- ▶ **1** Mighty Mountain 4-H youth, the Greenlee County 4-H STEM Ambassador, was part of a team of youth that attended Higher Orbits Space Camp in Florida. The team competed against other states to create an experiment to go on the International Space Station. The Greenlee youth brought his experience back to Morenci and completed several science experiments with 4th grade classes.

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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 and interested home school students learn how to grow vegetables and graft fruit trees that are planted at the different school sites, 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.*
- *At the Fall Blue School program, 7 students and 2 adult community members learned to understand soil composition and water quality, how those affect plant growth, and how to adjust growing practices when necessary.*
- *Two 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.*



Our two AmeriCorps preparing supplies for a lesson on soil composition and water quality.



Volunteers apply plastic mulch for bindweed control.

2022 – BY THE NUMBERS

- ▶ **676** Horticultural inquiries were provided gardening information.
- ▶ **607** Hours were recorded by **123** adult and **24** youth volunteers, valued at **\$18,180**.
- ▶ **41** Structured lessons were delivered to **266** adults and **465** youth. **78%** of the adults and **36%** of the youth attended multiple presentations.
- ▶ **90** YouTube videos had **45,664** views, an increase of **496%** from the previous year.
- ▶ **119** Duncan Elementary students learned about pumpkins at the Annual Pumpkin Patch Day held at the Extension Office. **7** home school youth and **2** parent volunteers planted and cultivated the Pumpkin Patch beginning in June.

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AmeriCorps Members
Savanna McReynolds
Amanda Blake

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 and 25% from crops”.

Because of the Greenlee County Livestock Production Program,

- *5C's – Third grade students from Graham and Greenlee Counties learned about Copper, Cotton, Cattle, Climate, and Catch (physical activity).*
- *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.*
- *Cattle Nutrition Workshop – We had great educators, and it was a collaborative effort between UA Extension and NMSU Extension. Discussed the impact of nutrition on cattle health and reproduction.*
- *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.*



2022 – 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) – **12** participants learned about cattle reproduction systems and how to properly palpate and synch cows for breeding.
- ▶ Artificial Insemination Clinic (Santa Rita Experimental Range) – **6** participants learned about cattle reproduction systems and how to properly palpate and synch cows for breeding.

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◀◀◀ Nutrition, Gardening, & Physical Activity ▶▶▶

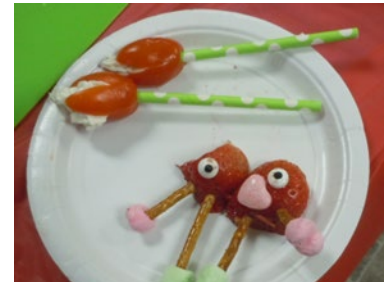
In 2015, a focus group was held in Greenlee County, comprised of various community members and representatives. Educating individuals and families within the community on health, nutrition, and fitness were identified as a priority. The Supplemental Nutrition Assistance Program-Education (SNAP-Ed) is able to promote healthy nutrition, gardening education, and a physically active lifestyle to provide an overall sense of well-being to residents of Greenlee County. The SNAP-Ed program works in concert with the AZ Health Zone, a public and private partnership led by the Arizona Department of Health Services (AZDHS) Bureau of Nutrition and Physical Activity, which partners with the UA Cooperative Extension.

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. Students were able to participate in many gardening activities that included planting Swiss chard, nasturtiums, and peanuts which grew over the summer break and were harvested in September. Students made Swiss chard into soup and nasturtiums into pesto. The peanuts were roasted at the Extension office, returned to the students, and taken home to share with their families. Some raw peanut seeds were saved for the kindergarten class to plant in the 2023 growing season. The curricula used with the students are designed to increase participants' knowledge in nutrition, gardening, and physical activity.*
- The Kids' Cooking Club summer program promotes nutrition and cooking education for youth ages 6-8 in the Duncan/York community in cooperation with public libraries. The format changed to 2-3 day camps during June and July. This change allowed for the participants to build their skills from one day to the next, and increased information retention. Attendance for sessions was steady as families had the flexibility to choose either the June or July sessions. Newly acquired kitchen equipment by the libraries gave participants the opportunity to practice cooking a variety of recipes. The Kids' Cooking Club has expanded into once-a-month classes during spring and fall months.*



Peanut harvest, Duncan Elementary.



Tomato Tulips and Strawberry Buddies, Kids' Cooking Club.

2022 – BY THE NUMBERS

- ▶ **10** vegetable/fruit nutrition information sheets and **28** recipes distributed to **100-150** food bank recipients throughout 2022.
- ▶ **12** gardening activities at Duncan Public Schools, two per each grade (K-5), **170** students.
- ▶ **2** gardening activities at Duncan Head Start (Pre-K), **12** youth participants, **5** parent volunteers.
- ▶ **5** Kids' Cooking Club Day Camp sessions, **50-60** youth participants (ages 6-12).
- ▶ Kids' Cooking Club, three Spring 2022 classes (Feb-Apr), and three Fall 2022 classes (Oct-Dec) at Duncan Public Library, **38** youth participants, **6** adult/parent volunteers.

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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.*



2022 – BY THE NUMBERS

- ▶ **6** Sites on **2** USFS allotments were monitored. Monitoring reports were prepared for each allotment and given to agencies and ranchers.
- ▶ An additional **\$70,000** was obtained in a grant to support the monitoring program.
- ▶ Worked with the Upper Eagle Creek Watershed Association, facilitated **1** NEPA meeting with ranchers and the USFS.
- ▶ Read and recharged **9** remote rain gauges from Duncan to south of Alpine and input data into my RAINge log (<https://myraingelog.arizona.edu/>).
- ▶ Taught the following at Blue School: The Water Cycle and Wildlife Mammals – Skins and Skulls.
- ▶ 11.5 miles of fence from the Bear Fire by Eagle Creek was repaired or replaced (Anita Thompson).

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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, and Malta Starthistle 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.*



Noxious Weed Workshop held in March 2022.

2022 – BY THE NUMBERS

- ▶ **20** YouTube views of noxious weed video.
- ▶ **12** participants attended a noxious weed workshop.
- ▶ **3,300** acres inventoried and monitored for targeted noxious weeds.
- ▶ **21** cooperators treated **2,877** acres of noxious weed infestations.
- ▶ **2** grants obtained: 1 for research and 1 for an Integrated Weed Management Demonstration Area at Duncan High School.
- ▶ **1** peer-reviewed Cooperative Extension paper published.

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YouTube: <https://www.youtube.com/channel/UC9yQoldTyDWXuUt5yahS0LQ>
(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.

Mail – You can give by check. Please make your check payable to: "University of Arizona Foundation." Please note which county and which program, if applicable, you would like your donation to support.

Gifts may be mailed to:
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301 Forbes Building
PO Box 210036
Tucson, Arizona 85721-0036

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