



# University of Arizona Cooperative Extension

## Greenlee County Annual Report 2021

Improving Lives, Communities, & the Economy



THE UNIVERSITY  
OF ARIZONA



## 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. This year we have supported the spark - curiosity that youth can pursue into a passion and take it from an interest to a personally defined level of mastery.

*Greenlee 4-H youth members say that 4-H gives them the opportunity to develop confidence in themselves.*

- *Our livestock judging program trains youth to be self-confident and assertive through their quick decision making. Participants also sharpen their public speaking skills.*

*As a result of the 4-H program, participants have a better idea of what they might do after high school.*

- *The GEAR UP program, created in partnership with The Greenlee Sheriff's Office, provided instruction to 50 Morenci High School Freshmen. This Emergency Action Resource taught disaster preparedness through hands-on opportunities as well as provided 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 on a county or club level. This year we had 32 members deliver their demonstration in front of their peers, volunteers, and parents.*

*Year-end evaluations showed that over 60% of 4-H members feel that they can identify ways to meet their community's needs.*

- *The county program participated in four in-person service projects that provided members the opportunity to give back to their communities.*



### 2021 - By the Numbers:

- 37 youth participated in Greenlee County 4-H clubs.
- 10 certified adult volunteers.
- GEAR UP: 82% of participants found the program to be very valuable, and 35% are more interested in a first responder career.
- Volunteers donated 375 hours of their time, worth \$10,103.

Program Responsibility: Ashley Menges

## STEM - Science, Technology, Engineering, and Math

2021 Was packed with various STEM programs and experiences for our county youth, both virtually and in-person. The events of the previous year taught us that flexibility was key to our survival. We held activities with masks, without masks, with kids in-class and virtually at the same time—whatever it took to be able to interact with youth. After an absence of spring break activities due to Covid protocols keeping us apart, we had a packed summer calendar with identical events in both Duncan and Clifton exposing youth to new technology such as 3-D design and printing, and DSLR photography with new equipment. Besides our local programs, we also had the chance to offer national and statewide programs like Mars Base Camp, Ag Innovators Experience, and the Greenhouse SEED project, giving our youth the chance to exchange ideas with their peers across the country.

Participants in STEM programs this year:



*Photo 1: Youth and a parent build catapults out of supplied materials for a contest of distance throwing at the Clifton Library. Fall Break 2021.*



*Photo 2: An all-female engineering crew designs and builds catch and release traps for the December 2021 Catch and Release Reindeer Challenge at Duncan Library.*



*Photo 3: Summer 2021 Advanced Lego Mindstorms camp. Clifton Library.*

### 2021 - By the Numbers:

- 18 Duncan youth, 15 Clifton/Morenci youth, and 3 adults participated in Fall and Winter Breaks engineering challenges at the county libraries.
- One Duncan youth participated in a statewide 4-H STEM project Greenhouse Sustainable Energy Engineering Design Project.
- 48 youth in Duncan and Clifton/Morenci and 5 adults participated in 4 unique summer programs at the county libraries. Photography, 3D Design and Printing, Robotics Exploration, and Advanced Lego Mindstorms. 3 youth entered photos at the Greenlee County Fair and won blue ribbons.
- One Mighty Mountain 4-H youth, the Greenlee County 4-H STEM Ambassador, taught the 3<sup>rd</sup>, 4<sup>th</sup>, and 6<sup>th</sup> grades (250 youth) at Metcalf Elem. and Fairbanks M.S. a 4-H national curriculum about how agriculture is helping combat climate change (Ag Innovators Experience “Curbing our Carbon Appetite”).
- 110 4<sup>th</sup> graders learned Earth Science and the rock cycle with the help of a Freeport geologist.
- Greenlee County participated in the AZ state Robotics Coder Z competition with a team of five 5<sup>th</sup> graders from Fairbanks M.S.
- 26 youth and 3 adults participated in drop-in STEM activities at the county libraries such as weather in a jar, catapult contest, Tupperware banjo, and parachute challenge.

Responsibility: Kim Johnson



## Nutrition, Gardening, and Physical Activity Education

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. While these aspects are still a priority within the community, the impact of Covid-19 has shifted the focus of the programs available to the communities as residents face issues of food insecurity, health safety awareness, and the need to feel and become more self-sufficient. 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 during these uncertain times 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.

- *Partnered with the Duncan Food Bank to address food insecurity to provide healthy recipes (sourced through AZ Health Zone) and nutritional information to recipients. These resources correspond with the fruits, vegetables, or other food items being supplied to recipients on a monthly distribution day. A survey was also conducted in May 2021 to improve nutritional information offered to the food bank recipients.*
- *Until in-person Direct Education resumed at the Duncan Head Start and Duncan Elementary School, the classes were held virtually. The materials for the classes and gardening activities were dropped off prior to each class and picked up afterward with instructions relayed via Zoom. The Direct Education curricula used is designed to increase participants' knowledge on nutrition, gardening, and physical activity.*
- *The KIDZ Cooking Club, a summer program in cooperation with libraries, promotes good nutrition for youth in Clifton and Duncan. The 2021 participants were able to meet in person! Each class focused on an element that related to summer life in Arizona or gardening- such as infused waters to stay healthy or how beans can improve soil and help keep bodies strong. These classes expanded into the fall at the Duncan Public Library.*



### 2021 - By the Numbers:

- Six vegetable/fruit nutrition information sheets and 30 recipes distributed to between 100-150 food bank recipients throughout 2021.
- May 2021 food bank recipient survey (30 responses, 14 recipes): 76.6% satisfied with recipes received, recipes: 48.3% tried 1-3, 20.7% tried 4-6, 10.3% tried 7-10.
- Four virtual and seven in-person gardening activities at Duncan Public Schools, grades K-5, 141 students.
- Two in-person gardening activities at Duncan Head Start (Pre-K), 10 youth participants.
- Three Fall KIDZ Cooking Club classes (Oct- Dec, one class per month) at Duncan Public Library, 36 youth participants.
- Three KIDZ Cooking Club summer sessions, 15 classes (five-week period, one class per week), 35 youth participants.



## Horticulture

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.

- *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, graft fruit trees that are planted at the different school sites and use and maintain a greenhouse used to grow plants for the gardens and to sell as fundraiser to support school programs.*
- *Up on the Blue, 11 students and 2 adult community members learned to graft fruit trees and plant them properly, for fruit production.*
- *Two AmeriCorps members provided assistance to the seed libraries, school programs, online content development and in preparation of monthly gardening classes.*
- *Production of several 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.*



*Figure 1. Blue School students with their grafted apple trees and a newly planted apple tree at the school.*



*Figure 2. Duncan High School trees growing for FMI Earth Day event.*

### 2021 - By the Numbers:

- 550 horticulture inquiries were provided gardening information.
- 1020.5 hours were recorded by 90 volunteers, valued at \$27,792.
- 48 structured lessons were delivered to 861 adults and 455 youth with 15% of adults and 55% of youth attending multiple presentations.
- 60+/- YouTube videos and 2 recorded webinars received 3,737 views.
- 105 Duncan Elementary School students learned about pumpkins at the Annual Pumpkin Patch Day held at the Extension office.

Program Responsibility: Bill Cook

AmeriCorps Members: Savanna McReynolds, Marva Schenk

## Livestock Production

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”. The beef industry has been impacted by COVID-19 and as an Extension Office we have made it our goal to positively impact the beef industry in Greenlee County.

- *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*
- *Bull Expo – Workshop that discussed the necessary need to invest in quality genetics in beef herds in Arizona.*
- *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) – 12 participants learned about cattle reproduction systems and how to properly palpate and synch cows for breeding.*
- *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.*



### 2021 - By the Numbers:

- 9 producers who attended the Bull Expo purchased 17 Bulls and 38 replacement heifers = \$178,000 invested in quality genetics from the Bull Expo. = \$59,000 came to Graham and Greenlee Counties
- 14 Allotments visited
- Positive networking, industry relationships, and educational material presented throughout Graham/Greenlee Counties and Arizona

Program Responsibility: Nate Brawley, Anita Thompson



# Rangeland Management

Rangelands are extremely 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 20+ years. Work is done collaboratively at both the local and state levels. In partnership with ranchers and the US Forest Service, allotments are monitored for long-term trend in vegetation. The nutritional value of rangeland forages has been of interest for many years. While at the UA, Dr. Jim Sprinkle conducted research in central Arizona. He found several micro nutrients to be deficient in our native forages, depending on soils derived from certain parent materials.

- *Ranchers and land management agency personnel have a better understanding of rangeland management and monitoring.*
- *Long-term rangeland monitoring data is available for US Forest Service permittees 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.*
- *Forage nutrition studies assist ranchers in knowing the quality of the forage their livestock are consuming and give them the ability to effectively supplement livestock to improve their health.*



## 2021 - By the Numbers

- 36 sites on five Clifton Ranger District allotments were monitored. Monitoring reports were prepared for each allotment and given to agencies and ranchers.
- Eight rain gauge sites throughout the county were measured for precipitation as part of a county-wide rangeland precipitation network.
- \$60,000 was obtained in grants to support the rangeland monitoring program.
- 11 students at the Blue School learned how Arizona's weather pattern and topography influences vegetation types and associated wildlife species, and how different ruminant animals have differing forage preferences.
- Applied for \$600,000 in grant funding to repair/replace allotment boundary/pasture fences that burned in the 2021 Bear Fire and the 2020 Cow Canyon Fire.

Program Responsibility: Kim McReynolds, JC McDonald, Anita Thompson

## Noxious Weeds

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.*
- *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.*



KEY NOXIOUS WEED SPECIES

### Russian Knapweed

Identification – Flowers

- Cone-shaped
- Borne on end of branches
- Vary in color from pink to lavender, rarely cream color



### 2021 - By the Numbers:

- In 2020 a video was made on the identification and control of noxious weeds and uploaded to the county Cooperative Extension YouTube Channel and had 22 views in 2021. From that video, 12 short videos were made in 2021. These are housed on the Greenlee County Weed Technician's field tablet and individual species information was shared in one-on-one trainings in the field with landowners.
- 3,418 acres were inventoried or monitored for noxious weeds.
- 41 cooperators treated 2,743 acres of noxious weed infestations of Russian Knapweed, Yellow and Malta Starthistle, Bull Thistle, Sandbur, and Whitetop with grant funded herbicide.

Program Responsibility: Kim McReynolds



## Greenlee County Cooperative Extension

**Cooperative Extension Mission:** To engage with people through applied research and education to improve lives, families, communities, environment, and economies in Arizona and beyond.

**Cooperative Extension Vision:** Cooperative Extension is a vital national leader in creating and applying knowledge to help people build thriving, sustainable lives, communities and economies.

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