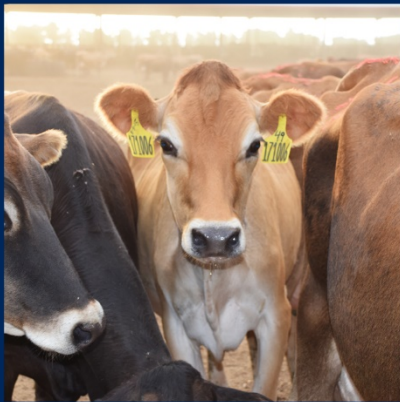




COLLEGE OF AGRICULTURE & LIFE SCIENCES
Cooperative Extension
Cochise County Annual Report 2017

◀◀◀ Improving Lives, Communities, & the Economy ▶▶▶



THE UNIVERSITY
OF ARIZONA

Cooperative Extension

Cooperative Extension enjoys a rich and proud history in this country. On May 8, 2014, we celebrated 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 needs 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 Cochise County. 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 2016.

Cooperative Extension, Cochise County

Faculty and Staff (as of 2/15/2018)

Darcy Dixon, Regional County Extension Director, Cochise and Santa Cruz

Mark Apel, Community Resource Development Area Agent

Jan Groth, Community Horticulture, Assistant in Extension

Kim McReynolds, Natural Resources Area Agent

Randy Norton, Agriculture Area Agent

Josh Sherman, Commercial Horticulture Area Agent

Evelyn Whitmer, Family & Consumer Sciences & Health Programs Area Agent

Ashley Wright, Livestock Area Agent

Cynthia Aspengren, Program Coordinator, Nutrition Education

Melanie Bargo, Accountant Associate, ASPIRE Program

Susan Bronson, Instructional Specialist, Water Wise & Energy Smart

Mary Ann Capehart, Instructional Specialist Sr., Water Wise

Rebecca Dailous, Instructional Specialist Sr., Water Wise

Rhegan Derfus, Instructional Specialist, Nutrition Education

Dustin Hancock, Research Specialist, Rangeland Monitoring

David Lieder, Program Coordinator, ASPIRE Program – State Program

Michael McIntire, Research Specialist, Rangeland Monitoring

Sally Peoples, Program Coordinator, Sr., ASPIRE Program - State Program

Ron Serviss, Instructional Specialist Sr., Water Wise & Energy Smart

Natoyah Swift, Instructional Specialist, Nutrition Education

Heather Robinson, Program Coordinator Sr., Nutrition Education

Casi Ruffo, Instructional Specialist, Nutrition Education

Christine Stuth, Oral Health Professional

Eric Thoutt, Program Coordinator, Sr., 4-H Youth Development

Kristin Valenzuela, Extension Program Assistant, 4-H Healthy Families

Wendy West, Program Coordinator, Sr., 4-H Youth Development

Valerie Davidson, Administrative Assistant

Tricia Dunham, Administrative Assistant

Connie Forsyth, Administrative Associate

Jennifer Stearman, Business Manager

Heidy Anway, Technical Expert, Dental Assistant, on-call

Sahil Arora, Technical Expert, Dentist, on-call

Stacy Atnip, Technical Expert, Dental Assistant, on-call

Mary Jean Debaca, Technical Expert, Dental Assistant, on-call

Torrey Dempsey, Technical Expert, Dental Assistant, on-call, Yuma

Claudia Garcia, Technical Expert, Dental Assistant, on-call

Shannon Herron-Grady, Technical Expert, Dental Assistant, on-call, Yuma

Lauren Orozco, Technical Expert, on-call

Nidya Rosas, Technical Expert, Dental Assistant, on-call

Daisy Higuera, Oral Health, on-call

Kaitlynn Hogan, Technical Expert, Dental Assistant, on-call, Yuma

Cecilia Little, Oral Health, on-call

Jody Sharp-Webb, Instructional Specialist, Horticulture, on-call

Tatianna Siler, Technical Expert, Dental Assistant, on-call

Elisabeth Tyndall, Technical Expert, Dental Assistant, on-call

Linda Wright, Technical Expert, Dental Assistant, on-call

AmeriCorps Members

Anthony Ruffo, FCHS

Logan Fenn, 4-H

Garrett Jackson, 4-H

Leigh Muckey, 4-H

Ben Rush, 4-H

Preslee West, 4-H

Extension Advisory Board

Dennis Moroney, Chair

Ron Bemis, Vice-Chair

Sandy Arevalos

Gwen Calhoun

Aaron Cardona

Barbara Clark

Julia Johnson

Dwayne Owen

Alan Seitz

Nathan Watkins

Albert Young

Office Locations

450 S. Haskell Avenue

Willcox Arizona 85643

tel: 520.384.3594

1140 N. Colombo

Sierra Vista Arizona 85635

tel: 520.458.8278 x 2141

66 Brewery Avenue

Bisbee Arizona 85603

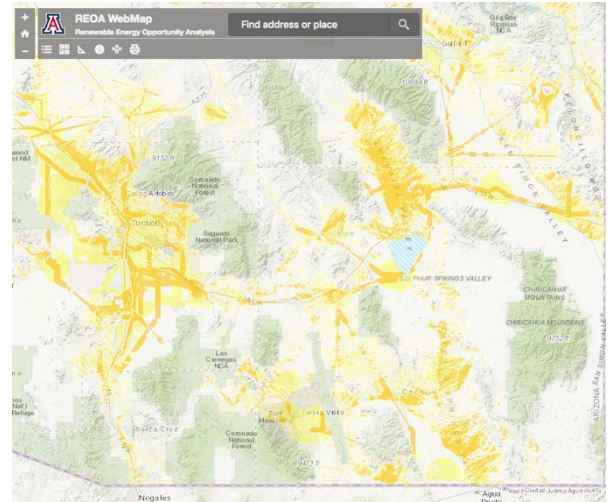
Tel: 520.366.8148

(Friday, 9am-3pm & by appointment)

Cochise County Cooperative Extension (CCCE)'s program in **Land Use Planning and Sustainable Development** helps southeastern Arizona's decision makers, planning officials, small acreage land owners and community organizations define and contribute to the future of their communities by becoming better informed about the changes to their rural landscapes. This program provides educational opportunities pertaining to the management of small acreage properties, renewable energy, land use planning, sustainability and local food systems. In addition, it makes resources around these topics readily available through the internet. Sustainable community and economic development activities are vital to the economic and social futures of rural Arizona, and can help its residents to adapt to a changing environment.

- *Decision makers, planners, towns, county officials, utility companies, and solar developers in Cochise County and throughout the state continue to have access to an interactive [online map](#) that identifies areas of high suitability for utility-scale solar facilities, potentially saving thousands of dollars that might otherwise be spent on costly scoping and suitability studies.*
- *Planning Commissioners throughout the state have an online professional development resource at their disposal via the [Arizona Citizen Planner online course](#), that will have the effect of better decision-making with regard to land use and development proposals, and higher quality economic development.*
- *Cochise County Planning Commissioners are better equipped to handle special use requests as a result of training from Cooperative Extension.*
- *Agricultural Producers in Cochise County are better educated about sustainability, hoop houses, direct marketing opportunities, organic certification, soil and water quality, and grass-fed beef.*
- *Small Acreage Land Owners are better equipped to undertake projects through resource inventories and have a better understanding of the natural and legal constraints on their properties as well as their water, soils and plant resources.*

Contact: Mark Apel
 Area Agent, Community Resource Development
 mapel@cals.arizona.edu



2017 – BY THE NUMBERS

- ▶ Organized and conducted 3 workshops with 100 participants in Cochise County around the topics of sustainable agriculture, planning and small acreage property management.
- ▶ Coordinated Externs in Sustainability program that had 10 student externs from the UA working alongside Extension personnel throughout the state in five counties.

Water availability is one of the most important natural resource and economic issues in Cochise County. Groundwater overdraft threatens to impact the federally protected San Pedro River National Conservation Riparian Area and the headquarters of U.S. Army Intelligence at Fort Huachuca. As the groundwater table lowers, it can impact the San Pedro River (in 2000, ecotourism contributed \$17 to \$28.3 million to the local community) and reduce missions on Ft. Huachuca which contributes an estimated \$2.4 billion to the County (Maguire Company and ESI Corp, Economic Impact of Arizona’s Principal Military Operations, 2008). The University of Arizona-Cochise County Cooperative Extension’s Water Wise Program is a key educational water conservation program in the county by providing solutions that empower citizens to conserve groundwater and helps communities and the economy remain strong.



Here’s how Water Wise helps:

- *With educational events teaching citizens about drip irrigation, rainwater systems, low water landscape plants and design, good watering practices, septic care; and annual Rainwater and Xeriscape Tours.*
- *With specialized on-site home and business visits providing specific conservation actions and follow-up.*
- *By partnering with Master Gardeners, municipalities, businesses, non-profits, citizens and schools on conservation projects.*
- *Providing water conservation resources through a [newly-designed website](#).*
- *With the Water Wise Youth Program and Ft. Huachuca’s Water Wise and Energy Smart Program.*



2017– BY THE NUMBERS

- ▶ Water Wise Community Outreach educators had 1,500 direct adult contacts
- ▶ Water Wise Youth educators had 7,408 direct youth contacts
- ▶ 425 adult and youth educational events were conducted by the Water Wise Program
- ▶ 38 residences had a site visit/consultation from Water Wise
- ▶ 90% of on-site visit recipients made some conservation change on their property
- ▶ Approximately 62,936 gallons of water are saved per year through grants from the Upper San Pedro Partnership Retail Committee grants, administered by Water Wise
- ▶ 1st recipient of the City of Sierra Vista’s Environmental Merit Award for 2017

Contact: Mark Apel
 Area Agent, Community Resource Development
 mapel@cals.arizona.edu

Cochise County 4-H Youth Development is an experiential learning youth education program for Cloverbuds (children 5-8 years old) and for youth, ages 9-18. Its practical life skills education in science and technology, healthy lifestyles and citizenship can reach any kid ... anywhere ... any time through 4-H clubs, camps, after-school and summer programs, educational events, and community service. We rely heavily on volunteers to reach more youth, lead educational programs, coordinate activities, and manage clubs and groups. Through engaging, hands-on experiences, young people develop specific skills that are important for jobs and careers such as leadership skills, ability to organize and lead meetings, set and achieve goals, financial awareness, and social skills. These skills arguably lead to greater physical and emotional health and educational and occupational success.

- *4-H Youth are two times more likely to make healthier choices, three times more likely to make contributions to their communities, two times more likely to graduate from high school and go to college, and two times more likely to pursue a career in science (Tufts University Study, December 2013).*
- *Through engaging, hands-on experiences, young people learn the skills and abilities to become productive adults who contribute back to the health and economic well-being of their communities. Public value: 4-H increases personal responsibility that positively contributes workplace skills and to communities.*
- *"Thank you for all the time you put into my children and their learning. I am thankful you gave us encouragement to participate in the skillathon. My daughters' have grown in leaps and bounds. They've built confidence in themselves, a gift every parent loves to see in their children. You believed they could be successful and never expected anything less. I am thankful, beyond words, for all you do and organize for my children." 4-H parent*



2017 – BY THE NUMBERS

- ▶ A total of 183 demonstrations conducted during the year with 52% at the project level, 43% at the club level, 5% at the county level, and 4% other level.
- ▶ Youth demonstrated knowledge gained in livestock management skills, quality assurance, nutrition, and breeding & performance quality with the Cochise County 4-H junior teams placing first at the state contest.
- ▶ 454 youth were year long club members and 1,147 youth participated in special interest, military clubs, and school enrichment programs..
- ▶ Year end evaluations of club members show 4-H is influential in developing responsibility, confidence and communication and subject matter skills.

Contact: Wendy West
Program Coordinator, Sr., 4-H Youth Development
wwest@email.arizona.edu

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, Bureau of Land Management (BLM), US Forest Service (USFS), and Natural Resources Conservation Service. Ranches are monitored for long-term soil and vegetation trends.

- *Ranchers and land management agency personnel have a better understanding of rangeland management and monitoring.*
- *Long-term rangeland monitoring data is available for USFS and BLM 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.*



2017 – BY THE NUMBERS

- ▶ Conducted 6 workshops or gave invited presentations on rangeland related subjects to 177 ranchers, agency personnel, and the general public.
- ▶ 205 sites on 95 BLM allotments and 55 sites on 16 USFS allotments were monitored. Monitoring reports were prepared for each allotment and given to agencies and ranchers.
- ▶ \$120,000 was obtained in grants to support the monitoring program.
- ▶ Field trials were initiated to look at the cost effectiveness of mesquite control using herbicides.

Contact: Kim McReynolds
Area Agent, Natural Resources
kimm@cals.arizona.edu

Commercial beef extension programs equip cattle producers to make informed decisions regarding herd health and management, cattle nutrition, genetics and stock selection, food and product safety, economics of profitability, sustainability, and the well-being of animals and public perception of the beef industry as a whole. Commercial beef production in Cochise County is primarily composed of cow-calf operations (ranches) that utilize a variety of federal, state, and private lands for grazing cattle, several feed yards, and a livestock auction yard. There are approximately 335 cattle operations in the county raising 57,000 head of cattle. As a whole, the Cochise County beef industry contributes \$34.5 million in sales to the economy. In addition to the economic contributions, ranches maintain working landscapes and healthy rangelands that also benefit wildlife and public recreation.

- *Ranchers are better equipped to make decisions that improve herd health, develop cattle that match their forage resources, increase pounds of healthy calves produced, and enhance the value of their livestock.*
- *Properly managed livestock grazing supports healthy rangelands and wildlife habitat.*
- *Public perceptions of the livestock industry are improved by increased numbers of ranchers utilizing low-stress animal handling and consumer driven guidelines from the Beef Quality Assurance program.*



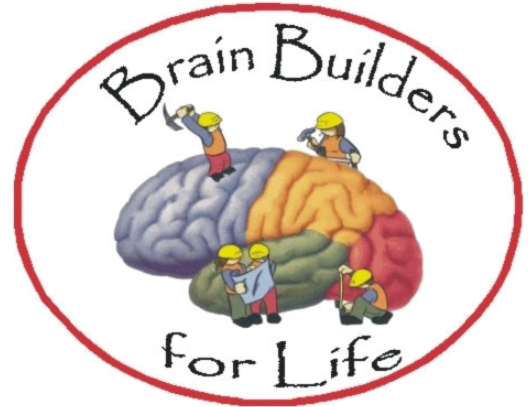
2017 – BY THE NUMBERS

- ▶ Conducted 5 workshops on topics related to livestock health and production, ranch management, and risk reduction strategies to 129 ranchers, agency personnel, and industry members.
- ▶ All workshop attendees were able to list at least one new concept they learned, and 97% indicated they intended to implement at least one new practice on their operation from the information provided.
- ▶ Four issues of “Arizona Range and Livestock News” were distributed to 464 readers per issue across Southeastern Arizona.

Contact: Ashley Wright
Area Assistant Agent, Livestock
awright134@email.arizona.edu

The Early Childhood Development programs in Cochise County help parents, childcare providers and those interested in children, understand prenatal care for parents, child health and safety, nutrition, child development and what it takes to give our children what they need to be healthy and ready to learn to be prepared for kindergarten. Our programs focus on the 0-5-year-old population. Our innovative experiential learning techniques create a fun learning environment for our brain building activities to stimulate young minds and help create a more positive social emotional setting for the children in their care. Early childhood programs show that participants have:

- *Shown improvements in educational process and outcomes for the child.*
- *Increased economic self-sufficiency, initially for the parent and later for the child.*
- *Reduced levels of criminal activity.*
- *Improvements in health and safety-related indicators, such as child abuse, maternal reproductive health, reduction in child mortality rates.*



2017 – BY THE NUMBERS

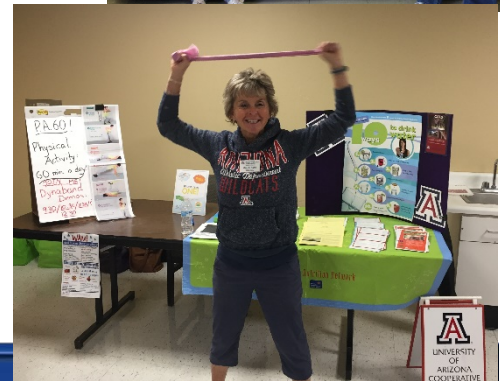
- ▶ 119 program participants were taught the skills to enrich children's lives with direct training classes ranging from 1 hour to 16 hours through our Brain Builders in Graham, Greenlee, Cochise, Santa Cruz, LaPaz and Pima counties and the Tohono O'odham Nation. Brain Builders program increased their knowledge by 85% of the subjects taught.
- ▶ \$154,254 was obtained in grants to support this program.

Contact: Evelyn Whitmer
Area Agent, Family, Consumer and Health Sciences
emarkee@ag.arizona.edu

Nutrition and physical activity education programs offered through the Cochise County Cooperative Extension promote healthy nutrition and physical active lifestyles and systems change that lead to healthier individuals and families in our communities. Our SNAP-Ed (Supplemental Nutrition Assistance Program –Education) program works in concert with the Arizona Health Zone, a public and private partnership led by the Arizona Department of Health Services, Bureau of Nutrition and Physical Activity which partners with the University of Arizona Cooperative Extension. This program serves schools, families and individuals that meet SNAP eligibility. The U.S. Department of Agriculture, National Institute of Food and Agriculture, Expanded Food and Nutrition Education Program (EFNEP) is designed to assist limited-resource audiences to acquire knowledge, skills, attitudes, and to change behaviors necessary for nutritionally sound diets, and to contribute to participant’s development and the improvement of the total family diet and nutritional well-being.

People involved in SNAP-Ed and EFNEP Programs:

- *Establish lifelong healthy behavior patterns.*
- *Are at lower risk for obesity, reducing health care costs.*
- *Have increased moderate physical activity each day.*
- *For each \$1.00 spent on the adult EFNEP program, it produced a benefit equivalent to \$10.96.*
- *Are not running out of food at the end of the month.*
- *Promote nutrition and physical activity policy in schools.*

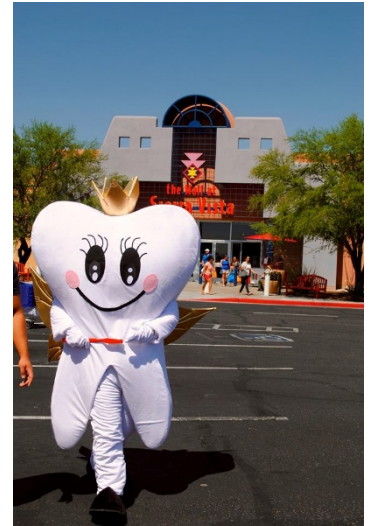


2017 – BY THE NUMBERS

- ▶ There were 8,899 participants in SNAP-Ed and EFNEP programs who received nutrition related messages.
- ▶ 46 volunteers provided 1,037 hours of their time with values at an estimated \$24,442.
- ▶ \$223,249.30 in grants was obtained for SNAP-Ed and EFNEP programs for Cochise County.
- ▶ 86% of the teachers surveyed report increased student participation in physical activity and healthy eating.
- ▶ Almost all teachers reported that children have changed the types of snacks they bring to school, there has been an increase in participation with the breakfast program.
- ▶ Policy change of recess before lunch, has been adopted in various schools.

Contact: Evelyn Whitmer
 Area Agent, Family, Consumer and Health Sciences
 emarkee@ag.arizona.edu

First Smiles Oral Health Program provides preventive dental health education, tooth brushing programs, oral health screenings and fluoride varnish application to children birth to age five. The new UA Sealant Program provides education, tooth brushing and dental sealants to low income children in the second and sixth grades. Tooth decay can be prevented by early intervention, dental visits, tooth **brushing**, flossing, healthy diets and oral health education. This program provides education and prevention services to children, teachers and childcare providers/educators on the importance of preventive oral health care and how to recognize and understand oral diseases and conditions. We facilitate child care providers to lay the foundation for a lifetime of good oral health with the implementation of classroom-based tooth brushing and providing oral health education and resources to the children. Additionally, First Smiles conducts outreach to dentists and other health professionals to encourage them to address the oral health needs of children, birth through age five.



- *Children ages 0-5 in Cochise County now receive early intervention to slow the progression of tooth decay and even prevent it in a collaborate effort throughout the county.*
- *Schools and centers receive oral health screenings and fluoride varnish applications for participating children. Fluoride varnish can reduce tooth decay by 37% to 63%¹.*
- *Children in the 2nd and 6th grades in low income schools receive dental sealants to prevent tooth decay. Sealants can reduce decay in school children by more than 70%.*
- *Children who attend participating child care centers brush their teeth on a daily basis with fluoride toothpaste at school. Fluoride toothpaste reduces tooth decay among children by 15% - 30%¹.*

2017 – BY THE NUMBERS

- ▶ Educated 2,083 children ages 3-5 on the importance of healthy oral habits and 52 professionals on oral health intervention.
- ▶ Provided 1,532 oral health screenings and administered 1,260 fluoride varnish applications.
- ▶ Provided sealants to 714 children in 2nd and 6th grade, 252 fluoride varnish applications (tri-county program).

Contact: Evelyn Whitmer
 Area Agent, Family, Consumer and Health Sciences
 emarkee@ag.arizona.edu

¹ Centers for Disease Control

² Arizona Department of Health Services



ASPIRE is a six state consortium that is made up from Arizona, Colorado, Montana, North Dakota, South Dakota, and Utah. Under the federal PROMISE initiative (Promoting Readiness of Minors in Supplemental Security Income), Cooperative Extension developed the curriculum and delivered programs to contribute to a 5-year case study with youth between the ages of 14 and 16 who receive Social Security Insurance through the Governor's Office. The mission of this project is to provide a number of services to disabled youth and their families and study what interventions will be most beneficial for future youth with disabilities. Cooperative Extension participates in the Arizona Component of this project and specifically worked on the self-determination aspect of this consortium. The program educates disabled youth to acquire new work and family life skills, and become the "vehicle" through which to maximize youth development through self-determination. Statewide, disabled youth attended two to six hours of training that included the topics of motivation and leadership, goal setting, making decisions, advocacy, being a good communicator and public speaking.

- *Disabled youth who experience positive youth development become adults who contribute to family, work, home and community.*
- *The PROMISE initiative offers a unique opportunity for the Western states, with diverse demographic and geographic composition, to inform federal policymakers on the results of this initiative.*



2017 – BY THE NUMBERS

- ▶ There were 53 special needs children who received the program learning self-determination skills.
- ▶ Parents were involved in the educational curriculum where we trained 36 parents.
- ▶ Hosted 77 trainings throughout the state.
- ▶ \$231,186 in grants was obtained for the ASPIRE programs for the State of Arizona.
- ▶ Parents and other adults reported that children were demonstrating the skills their children learned from the training provided to them.

Contact: Evelyn Whitmer
Area Agent, Family, Consumer and Health Sciences
emarkee@ag.arizona.edu

The Cochise Healthy Communities Initiative works to address and change the health issues throughout Cochise County. Through a partnership, leaders have developed community action "Healthy Communities" groups in each hub of the county who prioritize and resolve disparities related to health utilizing Elements of a Healthy Community that include the following: Access to health care and coverage; Affordable Quality Housing, Community Safety; Economic Opportunity; Educational Opportunity; Environmental Quality; Food Access; Healthy Community Design; Parks and Recreational Opportunities; Social and Cultural Cohesion; Social Justice; and Transportation Options. These "Healthy Communities" groups are connected to the district's School Health Advisory Councils (SHAC) to leverage resources to work together on larger health issues in the schools and their efforts. A community health assessment was developed with partner financial backing. With this assessment and through a strategic process across the county (2017) three goal areas have been identified as follows: 1. Mental Health & Substance Abuse 2. Good Jobs & Healthy Economy 3. Healthy Eating, Diabetes & Obesity.

- *Communities can make sustainable changes in their communities collectively.*
- *Leaders are advocating for environmental changes in the community to promote health, mental health/substance abuse to grow a healthy economy.*
- *Higher leadership in the county is informed and can make county decisions based on the identified needs and perspectives of these committees*



HEALTHY
COCHISE

The Cochise Healthy Communities Initiative

2017 – BY THE NUMBERS

- ▶ Local foundations and other funding sources have aligned the direction of their grants with the goals set forward by this group.
- ▶ A bus system was established between the major communities and a rural transport system was implemented in a high needs area.
- ▶ Dangerous walking areas for school children were identified and cross walks were added with lighting and/or diverting traffic.

Contact: Evelyn Whitmer
Area Agent, Family & Consumer Health Science
emarkee@email.arizona.edu

Tree nuts, fruit trees, and vines contribute over \$150 million to Arizona's economy on an annual basis and the production of such crops is expected to increase. There are currently more than 32,000 acres currently planted in tree nuts and vines (25,000 in pecan, 5,500 in pistachio, and 2,000 in grape). About 2,000 acres are planted annually in pecan and pistachio. To date only about half of the acreage in pecan and pistachio is in fruit-bearing production age thus future economic impact is expected to continue to rise. Cochise County accounts for 90% of the tree nut and grapevine production in the state. The Southeast Arizona climate and soils offer the environment that is conducive to growing such crops but also presents some of its own challenges. For instance, in pistachio nut production fungal pathogens can have a significant impact on the quality and yield when it is time for harvest. Some of the most common fruit and leaf fungal diseases are the *Septoria* leaf spot and the shoot blights, *Phoma fungicola* and *Botryosphaeria* to name a couple. *Phoma fungicola* is specific to Arizona pistachios and not a disease pressure for California pistachio producers. These fungal pathogens can cause significant losses at harvest as it causes the pistachio fruit to become unmarketable. In 2016, the second American Viticulture Area (AVA) was federally recognized. Designated AVA's in the state of Arizona include Sonoita/Elgin and now Willcox. A viticulture educational symposium is now in production annually as a result of the increased wine grape interest. More than 80% of the state total grape production is in Cochise County; therefore, the commercial horticulture program is responsible for the coordination, organizing of educational material, and evaluation of the viticulture needs of the grape growers. With the warming trend noticed in late winter months, weather extremes also present risk for commercial crops in Southeast Arizona. It is necessary that growers be informed when an extreme weather event may pose risk to negatively impact their crop due to timing with its development stage. Also, the demand to learn about horticulture and farm business planning has grown in Cochise, with specific interest to grow their own produce, fruits, and nuts on small acreage farms and a focus on organic agriculture and improving soil health using cover crops.



- *Plan, implement, and evaluate effective outcome-based programs to support identified issues in horticulture crops.*
- *Integrate new science-based knowledge, technologies, decision-support systems, and best management practices for growers and stakeholders.*
- *Optimize efficient, economical, and sustainable production of horticultural crops.*
- *Strengthen local and regional food supplies.*



2017 – BY THE NUMBERS

- ▶ Three plant mineral nutrition research studies were conducted, and horticulture measurements were taken on pecan trees in San Simon.
- ▶ 500 Seedling trees were transplanted at the Safford Agricultural Center to initiate the start of a pecan rootstock salinity research study.
- ▶ Two herbicide research studies were implemented in pecan and pistachio orchards in San Simon and Willcox to investigate the potential positive effects of using pre-emergent herbicides in tree nuts.
- ▶ 111 Acres were implemented into root rot (PO) research of pecan where 3 treatments were established of a control check, max rate, and half rate of flutriafol fungicide.

2017 – BY THE NUMBERS (CONT.)

- ▶ Two pistachio orchards (32 total acres) with high pressure of *Phoma fungicola* were implemented into fungicide research.
- ▶ *Phoma fungicola* infection on the pistachio fruit can increase 93 – 98 % if left without fungicide treatment and 44 – 54% increased infection in trees left untreated at bloom stage.
- ▶ 148 Stakeholders and growers receive updates for Southeast Arizona weather extremes, a 12% increase from the previous year.
- ▶ 30 Beginning farmers attended the Beginning Farmer’s & Ranchers’ Advanced class held in early 2017.
- ▶ 56 Stakeholders throughout the county attended the first Southeast Arizona Agriculture Producers’ Forum held in December 2017.
- ▶ 90 Grape industry stakeholders attended the first Arizona Viticulture Symposium held in January 2017 of which 100% of growers that attended said they were implementing a new practice in their operations they learned.
- ▶ 8 Phenology cameras equipped with temperature data loggers were installed in the canopies of pecan, pistachio, apple, and grape near existing AZMET stations (San Simon, Willcox, Bonita, and Bowie) to record bud-break to fruit ripening phenological development in various micro-climates.
- ▶ \$78,769 Obtained in grants and in-kind gifts since 2015 for program support.

Contact: Joshua Sherman
 Area Assistant Agent, Commercial Horticulture
 jdsherman@email.arizona.edu

Master Gardeners, volunteers trained by Cooperative Extension, are an important part of consumer horticulture programming. Master Gardeners are trained volunteers who provide educational information to Cooperative Extension clientele. Cochise County Master Gardener Volunteers support the University of Arizona Cooperative Extension by providing researched-based information on environmentally responsible gardening and landscaping to the public. They teach good gardening practices through hands-on demonstrations, educational display gardens, an annual conference, and one-on-one consultations. Along with their gardening knowledge, they contribute valuable skills like photography, writing, editing, event planning, teaching and leadership. To become a Master Gardener they complete the 14 week training course requirements and complete 50 hours of volunteer service. To maintain their certification, they must contribute 25 hours of volunteer service and 12 hours of continuing education each year after becoming certified. Today the need for these volunteers is greater with increasing interest and demand for gardening-related advice.

Cochise County Master Gardeners:

- *Improve the natural environment through public education that leads to wise use of natural resources.*
- *Increase residents' access to University of Arizona Extension through their broad and continuous public presence and referrals and access to research based information.*
- *Helps educate Cochise County residents with the latest horticultural information from the University of Arizona.*
- *Practice and educate about environmentally friendly landscapes which leads to reduced pesticide and water used on the landscapes.*



2017 – BY THE NUMBERS

- ▶ 37 Active Master Gardener volunteers reported 3,286 volunteer hours valued at \$23.57/hour for a total of \$77,451.
- ▶ 23 Students completed the Master Gardener 16-week class series.
- ▶ 118 People attended the 24th Annual High Desert Gardening & Landscaping Conference which is produced by Master Gardeners. It is the longest running gardening conference of its kind in the Western U.S., featuring numerous talks and workshops by a variety of speakers from academia and the horticulture industry.
- ▶ Master Gardeners have produced a monthly newsletter for 29 years, reaching more than 2,000 readers, and is still in publication.
- ▶ Master Gardeners have given 12 presentations/talks on various topics for organizations throughout the county upon invitation.
- ▶ Master Gardeners opened Cochise County's 1st Community Seed Library for the public to check seeds out at no charge. The Library is open weekly and features more than 50 varieties of heirloom, non-GMO, non-hybrid, and/or open-pollinated seeds.
- ▶ 2 Active Master Gardeners developed and maintain the Butterfly Gardens at Kartchner Caverns State Park.

2017 – BY THE NUMBERS (CONT.)

- ▶ Cooperative Extension offered a 16-Week Master Gardener 2017 Class Series which was successfully completed by 23 students, most of whom have subsequently become active in the Cooperative Extension volunteer structure.
- ▶ Master Gardeners have met with both our local and county school superintendents to work on development of curriculum for pre-K – 12 classes to make field trips to the Discovery Gardens for STEM science classes and projects.
- ▶ Spring and Fall Master Gardener Plant Sales were successfully produced, in April and September respectively. The purpose of the sales is 2-fold
 - Educational Outreach with 75-minute pre-sale Plant Talk on each of the native and desert adapted plants for sale, their care, growth, sun, and water requirements, and numerous gardening tips.
 - Fund-raiser to help support the ongoing development and maintenance of the Discovery Gardens.
- ▶ Master Gardeners secured a grant from Community Food Bank of Southern Arizona to develop the “Healthy Living Edible Gardens” which feature 12 methods of growing vegetables, herbs, and berries in modes such as classic in-ground gardens, vertical gardens, tower gardens, wheelchair accessible raised beds, classic raised beds, ladder gardens and a variety of container gardens.
- ▶ After 2 years in development, The Discovery Gardens at UA Sierra Vista, Cochise County’s first educational demonstration garden, officially opened Oct. 14, 2017. We are now permanently in an ongoing development and maintenance mode.
- ▶ The Pavilion in the Discovery Gardens was completed and decorated and has already hosted 6 Master Gardener workshops for the public.
- ▶ The Discovery Pavilion and Gardens have already taught 5 high school science classes and 2 science classes for Cochise College. Several more are currently being scheduled.
- ▶ Master Gardeners host an information/education table at the Farmers’ Markets in Sierra Vista and in Bisbee.
- ▶ Master Gardeners assisted with the annual Xeriscape Tour which is offered by UofA Cooperative Extension, Cochise County Water Wise Program.
- ▶ Master Gardeners formed a “Craft Team” to create products to sell at our Plant Sales for additional fund-raising.
- ▶ Master Gardeners continue to maintain the road-clean-up of Campus Drive in the Sierra Vista city program twice a year.

Contact: Jan Groth
 Assistant in Extension, Horticulture
 jangroth@email.arizona.edu