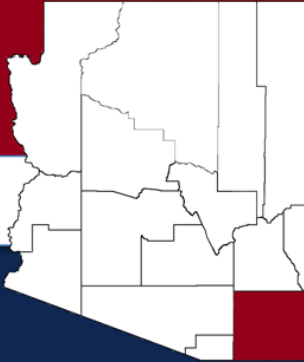


Cooperative Extension



Cochise County Report 2016



Improving Lives, Communities,
and the Economy



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 2/13/2017)

Susan Pater, County Director, 4-H Youth Development Area Agent

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

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Casi Ruffo, Instructional Specialist, Nutrition Education

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Tricia Dunham, Administrative Assistant

Connie Forsyth, Administrative Associate/Program Coordinator Sr.

Alicia Wilson-Huff, Business Manager

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Mary Debaca, Technical Expert, Hygienist, on-call

Connie Dunham, Office Assistant, on-call

Daisy Higuera, Oral Health, on-call

Cecilia Little, Technical Expert, Hygienist, on-call, on-call

Ann Lucke, Technical Expert, Dentist, on-call

Diana Milazzo, Technical Expert, Hygienist, on-call

Gladys Olsen, Office Assistant, on-call

Lauren Orozco, Technical Expert, on-call

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

Steve Shields, Research Technician, Horticulture, on-call

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

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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 exurbanization, 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 are able to access 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.*
- *Small Agricultural Producers in Cochise County are better educated about hoop houses, direct marketing opportunities, organic certification, soil and water quality, and zoning issues.*
- *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 including water, soils and plants.*



2016 – BY THE NUMBERS

- ▶ Participated in 10 workshops with 94 different participants in Cochise County around the topics of local food systems, beginning farmers, planning and small acreage property management.
- ▶ Coordinated Externs in Sustainability program that had 11 student externs from the UA working alongside Extension personnel throughout the state, including 1 extern in Cochise County working in Youth Development.

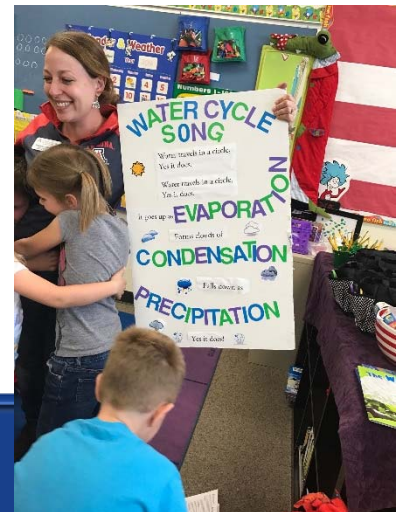
Contact: Mark Apel
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Water availability is one of the most important natural resource and economic issues in Cochise County. Groundwater overdraft threatens to impact the federally protected San Pedro River National Conservation Riparian Area and the 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.*
- *With the Water Wise Youth Program and Ft. Huachuca's Water Wise and Energy Smart Program.*



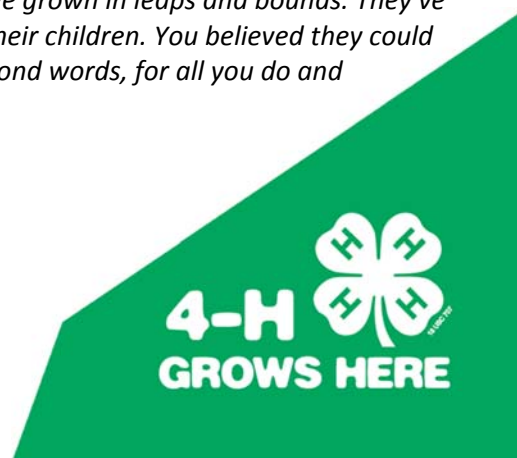
2016 – BY THE NUMBERS

- ▶ 1,070 adults had direct contact with Water Wise educators
- ▶ 4,854 youths had direct contact with Water Wise educators
- ▶ 291 adult and youth educational events were conducted by the Water Wise Program
- ▶ 23 residences had a site visit/consultation from Water Wise
- ▶ 5 Cochise County properties directly benefitted from hands-on erosion control workshops on their rural properties
- ▶ 98% of on-site visit recipients made some conservation change on their property
- ▶ Approximately 741,816 gallons of water are saved per year through grants from the Upper San Pedro Partnership Retail Committee grants, administered by Water Wise

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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*



2016 – BY THE NUMBERS

- ▶ A total of 177 demonstrations conducted during the year with 54% at the project level, 42% at the club level, 3% at the county level, and 1% 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 second and seventh and the senior teams placing first and third at the state contest. The senior team will be representing Arizona at the national contest in Louisville, KY.
- ▶ 463 youth were year long club members and 1,190 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.

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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, 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.*



2016 – BY THE NUMBERS

- ▶ Conducted 4 workshops, field days, and invited presentations on rangeland related subjects to 187 ranchers, agency personnel, and the general public.
- ▶ 103 sites on 40 BLM allotments and 32 sites on 13 USFS allotments were monitored.
- ▶ 53 monitoring reports were prepared for each allotment and given to agencies and ranchers.
- ▶ \$109,700 was obtained in grants to support this program.

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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 to their herd management that prevent disease, improve range conditions, and increase their pounds of healthy calves produced.*
- *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.*



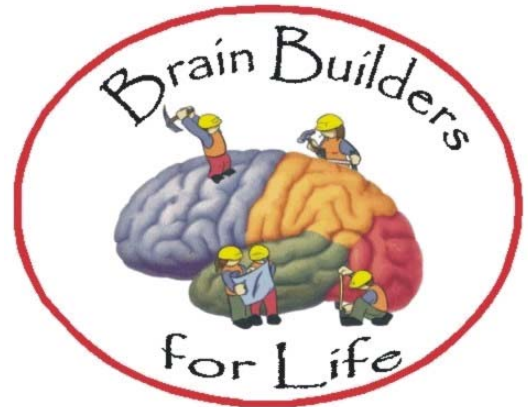
2016 – BY THE NUMBERS

- ▶ Cochise county ranchers are better equipped to make decisions appropriate for their operation and goals following two county workshops dedicated to using Expected Progeny Differences (EPDs) for bull selection and plant toxicity on Arizona rangelands.
- ▶ Four issues of “Southeastern Arizona Range and Livestock News” were distributed to nearly 300 readers per issue across Southeastern Arizona.

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The Early Childhood Development programs in Cochise County help parents, childcare provider and those interested in children, understand prenatal care for parents, child health and safety, child development and what it takes to give our children what they need to be healthy and ready to learn. Our programs focus on the 0-5 year old population. These programs help parents and childcare providers learn skills about child development, health and safety, and nutrition with literacy and educational skills that help prepare children for kindergarten. Our innovative experiential learning techniques creates 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.*



2016 – BY THE NUMBERS

- ▶ 82 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 Cochise, Greenlee, La Paz, Pima, & Santa Cruz Counties.
- ▶ Brain Builders program increased their knowledge by 81% of the subjects taught.
- ▶ \$154,254 was obtained in grants to support this program.

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Nutrition and physical activity education programs offered through the Cochise County Cooperative Extension promote healthy nutrition and physically active lifestyles 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 Nutrition Network (AzNN), 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 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.*
- *Not running out of food at the end of the month.*



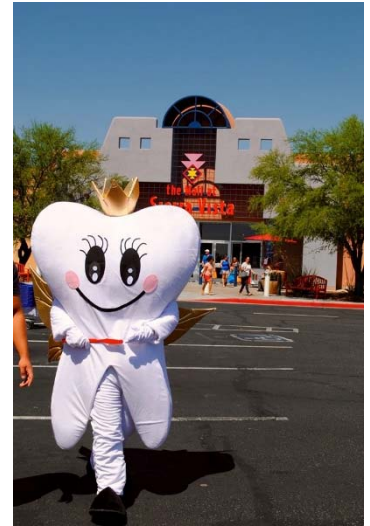
2016 – BY THE NUMBERS

- ▶ There were 7,636 participants in SNAP-Ed and EFNEP programs who received nutrition related messages.
- ▶ 29 volunteers provided 514 hours of their time with values at an estimated \$9,926.
- ▶ \$271,477 in grants was obtained for SNAP-Ed and EFNEP programs for Cochise County.
- ▶ 78% of the teachers surveyed report that their students eat more fruits and vegetables.

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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. 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 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. First Smiles provides early intervention and collaborates with health professionals across the county. Intervention programs, early childhood education and child care programs have proven to be an effective method for connecting children to oral healthcare in a timely manner¹.*
- *Schools and centers receive oral health screenings and fluoride varnish applications for participating children. Fluoride varnish can reduce tooth decay by 37% to 63%².*
- *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%².*



2016 – BY THE NUMBERS

- ▶ Educated 1,600 children ages 3-5 on the importance of healthy oral habits.
- ▶ Educated 70 pregnant women on healthy oral habits for themselves and their families.
- ▶ Educated 60 professionals in Cochise County on providing early oral health intervention.
- ▶ Provided 907 oral health screenings and administered 907 fluoride varnish applications.

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¹ The Association of State and Territorial Dental Directors (2011)

² Centers for Disease Control





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.*



2016 – BY THE NUMBERS

Twenty eight Master Gardener volunteers reported 1,571 volunteer hours valued at \$22.83/hour for a total of \$35,866.

Twenty one students completed the MG Basic Training course.

High Desert Gardening & Landscaping Conference attended by 101 people. Forty-four survey responses: 68% said they were able to update their skills; 80% said they acquired news and/or advanced skills; and 91% said they increased their knowledge upon which to base their decisions/actions in related areas.

Two integrated pest management workshops conducted with 98 participants.

Discovery Gardens: Numerous contributions and continued partnerships: Sierra Vista Area Garden Club (sponsored Breast Cancer Awareness Pink theme garden), UA South Foundation (lease of land and contribution to fencing), Cochise Water Project (donated a 20,000 gallon water harvesting tank), City of Sierra Vista (donated building permit); Lowe's Hardware (special discount pricing); and Southwest Gas (adopted an area as a community service project contributing \$1,500 with 20 persons each contributing 4 to 6 hours of time).

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Fruit/Nut trees and vines contribute over \$150 million to Arizona’s economy annually and the production of such crops is expected to increase with approximately 28,000 acres currently planted. Over half of this total production is primarily grown in Cochise County. Southeast Arizona’s climate and soils offer the environment that is conducive to growing such crops but also presents some challenges. In pistachio nut production (5,500 acres in Cochise) a fungal pathogen known as *Phoma fungicola* is specific to Arizona pistachios. It can cause significant losses at harvest time as it causes the harvested nuts to be unmarketable. In 2016 Willcox grape growers were given federal recognition and claimed an official American Viticulture Area (AVA) designation. Of the 2,500 wine grape acres grown in the state of Arizona more than 80% are grown in Cochise. In 2015 a “new” bacterial pathogen, *Xylella fastidiosa*, was positively confirmed in pecan trees. A statewide bulletin and survey was disseminated to examine the distribution of the pathogen in the state. 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 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.*



2016 – BY THE NUMBERS

- ▶ Two ‘Beginning Farmers Workshop Series’ classes were given in 2016 with 57 total participants.
- ▶ Three plant mineral nutrition research studies were conducted and over 1,000 photosynthesis measurements were taken on pecan trees in San Simon.
- ▶ Two pistachio orchards (1 in Cochise, 1 in Graham) performed fungicide research on 32 total acres, 4 acres per treatment.
- ▶ *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.
- ▶ *Xylella fastidiosa* seems to be an endemic pathogen in Arizona pecan and other plant species with 71% pecan and 59% other species testing positive for *X. fastidiosa*.
- ▶ 130 stakeholder and growers receive updates for Southeast Arizona weather extremes.
- ▶ \$42,372 obtained in grants since 2015 for program support.

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