



The University
of Arizona

College of
Agriculture
and Life
Sciences

Cooperative
Extension

Yavapai
County Annual
Report 2013

*Improving Lives, Communities,
and the Economy*



COLLEGE OF AGRICULTURE
AND LIFE SCIENCES

COOPERATIVE EXTENSION
Yavapai County

From the County Director

2013 was another great year for Yavapai County Cooperative Extension! Our program areas included 4-H youth development, animal science, agriculture, horticulture, natural resources, and family consumer health sciences. These programs provided grassroots education to 27,866 Yavapai County residents in 2013. In addition, 237 citizens served as Cooperative Extension volunteers. These valuable volunteers enhanced Extension programming by helping Cooperative Extension educators deliver relevant educational programs and information to the citizens and communities of Yavapai County. The contribution of these trained volunteers totaled 16,121 hours of service with an estimated value of \$356,919. Cooperative Extension also benefited Yavapai County residents by providing direct assistance to other Yavapai County departments, municipalities, rural communities, and schools.



Cooperative Extension greatly appreciates the financial support, office space, and services provided by the Yavapai County Board of Supervisors. Yavapai County Cooperative Extension continues to leverage county contributions through collaborations with local partners and securing grant funding. With Yavapai County's continued support, Cooperative Extension is confident we can continue to offer high-quality educational programs making a brighter future for Yavapai County residents.

Sincerely,

A handwritten signature in black ink that reads "Jeff Schalaus".

Jeff Schalaus
County Extension Director
Agent, Agriculture and Natural Resources

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University of Arizona, Forbes Building (built in 1915) which houses the College of Agriculture and Life Sciences in Tucson.

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Executive Summary



Because of Yavapai County Cooperative Extension, in 2013...

- 162 active Yavapai County Master Gardener volunteers contributed 12,877 hours of service to their communities reaching 4,538 consumers with science-based gardening information. In doing so, they promoted sustainable pest management solutions, water conservation, use of appropriate landscape plants, and food production through backyard/community gardening.
- 170 youth were enrolled in Yavapai County 4-H Club Programs. These youth were supported by 47 volunteer leaders and enrolled in projects which included horse, sheep, swine, steer, rabbit, poultry, photography, leather craft, and Clover Kids.
- 146 school outreach visits were conducted across Yavapai County to promote STEM (science, technology, engineering and mathematics) education. Activities reached 3,780 students and averaged 1 1/2 hours in length. Activities included exploring properties of matter, magnetic fields, engineering design processes, lunar phases, seasons, the solar system and agriculture.
- 885 youth had outdoor science experiences at the James 4-H Camp at Mingus Springs. Located in Yavapai County at 6,500 feet elevation, the James 4-H Camp was acquired in 2011 by the University of Arizona with help from generous donors and serves as the statewide 4-H camp for Arizona.
- Wild Over Water (WOW) educational program reached 1,790 students in Prescott, Prescott Valley, and Chino Valley schools. Six docents brought these water-related experiential learning activities to school classrooms.
- The Verde Valley Water Festival reached 423 fourth graders. Eighty community volunteers assisted in delivering four different water education activities at Dead Horse Ranch State Park.
- 181 food establishment managers completed the 6-hour Professional Food Manager Class in both Prescott and Cottonwood. In doing so they increased their knowledge of food safety principles and how to make informed decisions to reduce risk factors and the incidence of foodborne illness in Yavapai County.
- The thirteen member Food Safety Industry Council (FSIC) met 6 times during 2013 to identify and address food safety issues in Yavapai County. The FSIC is the result of a partnership between Cooperative Extension and Yavapai County Community Health Services and provides guidance and feedback to the Yavapai County Board of Supervisors.
- 42 participants attended the Beginning Farmer's Program offered in the Prescott area. Principles taught were business planning, irrigation, plant nutrition, marketing, and hoop house construction over four half-day sessions.
- 20 participants attended Integrated Pest Management in a Child's World: an innovative School Pest Management program was introduced to countywide schools targeted at reducing student exposure to pesticides and creating safer learning environments.
- Ranchers, agency personnel, and volunteers increased their skills in evaluating ecological processes and managing adaptively through monitoring and evaluation programs.



2013 Educational Programs and Participation Data



Our educational programs focus on:

4-H Youth Development	4-H youth development programs, 4-H Leader training/support, youth leadership, and science, technology, engineering, and math (STEM) Education
Animal Science	V Bar V Ranch Experiment Station, Identifying Nutritional Deficits, Suggested Mineral Supplementation, Livestock Nutrition, Grazing Behavior, and Quality Assurance
Family, Consumer and Health Sciences	Food safety manager certification, consumer education, food preservation, early care education, early brain development, nutrition education, and community leadership
Horticulture	Master Gardener training and volunteer support, Arizona Certified Nursery Professional training, insect and disease management, backyard food production, and consumer helpdesks in Camp Verde and Prescott offices
James 4-H Camp	Support and educational programs offered at the statewide 4-H camp located in Yavapai County, the James 4-H Camp at Mingus Springs.
Noxious/Invasive Weed Management	Support to cooperating agencies/institutions/organizations, Arizona Agricultural Pesticide Certification, and public education
Range Management	Sustainability of grazed rangelands for ranchers and agency personnel, rangeland monitoring education, and access to technical and educational resources.
Small Farms	Beginning farmer training and support, assistance with Farm to School efforts, Good Agricultural Practices/Good Handling Practices (GHP/GAP) training, and educational resources.
Water Resources	Wild Over Water school docent program, Master Watershed Steward volunteer training and support, well water testing, septic system education, and Project WET (Water Education for Teachers)

Yavapai County Citizens Served in 2013

Program Area	Educational Outreach	Office Contacts*	Totals
4-H Youth Development	4,042	1,785	5,827
Animal Science	245	25	270
Family, Consumer and Health Sciences	536	1,911	2,447
James 4-H Camp	885	120	1,005
Horticulture	4,156	5,793	9,949
Natural Resources (includes noxious)	3,549	4,819	8,368
Totals	13,413	14,453	27,866

*Includes email, phone and face to face.

4-H Youth Development



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Yavapai County 4-H youth attending J.O.L.T. (Journey: Opportunities for Leaders of Tomorrow)

Yavapai County 4-H Clubs

4-H is the nation's largest youth development and empowerment organization, reaching more than 7 million 4-H youth in urban neighborhoods, suburban schoolyards and rural farming communities across America and the world. Findings from the first-of-its kind research project reveal how young people benefit from the programs and life-changing experiences offered by 4-H. In fact, according to the study, 4-H'ers are nearly likely to contribute to their communities. The research uncovered similar findings across other important areas including healthy living, civic engagement and academic achievement.

In 2013, the Yavapai County 4-H Club Program had a total of 52 adult volunteers and 167 youth members actively enrolled in formal club programs. The five most popular 4-H project areas were market swine (50 members), horse (24 members), rabbit (20 members), market sheep (18 members) and poultry (16 members). Other project areas with high interest included cake decorating, market goats,

cavy, dog, dairy goat, market beef, leadership, and Cloverbuds (educational activities appropriate for youth aged 5-8).

On June 10-14, sixteen 4-H members from three Yavapai County 4-H Clubs attended J.O.L.T. (Journey: Opportunity for Leaders of Tomorrow) at Camp Shadow Pines in Heber, AZ. While at J.O.L.T., youth participated in trust and teamwork building exercises, challenge courses, attended leadership workshops, dances, and participated in "Involvement Committees", which ranged from news publications to drama/theatrics.

In July, eight Yavapai County 4-H members attended the MoYava 4-H Camp at James 4-H Camp in Mingus Springs. The camp was comprised of 4-Hers from Mohave and Yavapai Counties. Youth participated in various activities including rocketry, swimming, arts and crafts, boating, stream invertebrate sampling, shooting sports (air rifle/archery), explored states of matter, fishing, forest health, first aid/Compression Only CPR, and fire safety. Of the 55 total participants, 41% said they were better able to make new friends after attending MoYava camp and 49% felt they were more willing to try new things. Overall, 95% of the participants liked having a joint Mohave and Yavapai County camp, with 91% planning to come back next year. Four Yavapai 4-H members also attended the Statewide 4-H Camp.

On October 18th-20th, Yavapai County had 16 horse members qualify to show at the State 4-H Horse Show at Westworld in Scottsdale. Members qualified in all areas of the horse project including English and western showmanship, reining, western and English equitation, equitation over fences, gymkhana, ranch sorting, and roping.

The Public Value of 4-H

When you invest in Arizona 4-H Youth Development, you support programs where young people learn critical life skills that help them become career and college-ready. 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.

Research from the Tufts Longitudinal Study of 4-H Positive Youth Development shows that 4-H participants are:

- Three times more likely to actively contribute to and give back their communities through time or money than other youth
- 2.2 times as likely as youth in other out-of-school time programs to report higher grades and 2.1 times as likely as youth in other OST programs to report high engagement in school.
- Two times more likely to graduate from high school and go to college

- 4.9 times as likely to expect to graduate from college as comparison youth
- Two times more likely to pursue a career in science
- Less likely to be involved in drugs and other risky behaviors
- 2.8 times as likely as other youth to report healthy habits
- About half as likely to use drugs and 3.4 times as likely to delay sexual intercourse.
- more likely than other youth to show the highest trajectories in positive youth development.

4-H prepares young people to be college and career-ready. According to a recent study by the Pew Charitable Trusts (2014) college graduates ages 25 to 32 who are working full time earn more annually—about \$2.01 million or 66% more over their lifetime—than employed young adults holding only a high school diploma.

4-H Youth Development—Science, Technology, Engineering and Mathematics (STEM) Education



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The Yavapai County 4-H Program Coordinator, Stacy DeVeau, conducted 146 STEM Education Outreach visits, in formal school settings, informal settings, such as in libraries, after school and camp programs, and pre-service teachers. STEM activities teaching about the properties of matter, magnetic fields, the design engineering process, lunar phases, seasons, and the solar system were provided for 3,780 students. The program reach has increased to serve more students. Additionally, Yavapai County Cooperative Extension supports the Spot: a Child's Museum, located in the Prescott Gateway Mall, which consults with Stacy regarding STEM exhibits.

Stacy has also been instrumental in fulfilling the needs of the 4-H program since the departure of our 4-H Agent from the University. Stacy coordinated the Volunteer Certification process, and communicated with 4-H youth and volunteers regarding 4-H opportunities, and the enrollment process for the new 4-H year. She coordinated record book judging and the award certificates and pins for all 4-H youth and volunteers. She continues to support 4-H functions while we seek a new Agent for Yavapai County.



Older 4-H youth members help Cloverbuds create and launch paper rockets at the 4-H/FFA EXPO.

The James 4-H Camp at Mingus Springs

The James 4-H Camp is the University of Arizona's only camp devoted to statewide 4-H youth. The James 4-H Camp is located on a secluded 55 acre wooded site at an elevation of 6500 feet on Mingus Mountain in the Prescott National Forest. 4-H camping programs have the unique opportunity to reach a variety of audiences, bringing together those from limited income, underserved families as well as those with access to a variety of services; youth living in both urban and rural areas; and those who participate in other aspects of 4-H in a club or school enrichment activity.



Arizona 4-H youth sampling aquatic invertebrates in Ash Creek at the James 4-H Camp at Mingus Springs.

The James 4-H Camp hosted 18 groups with a total of 885 campers in 2013. Seven groups consisting of 333 campers were 4-H youth. The other groups came from a variety of schools, colleges, churches, agencies, and organizations. Yavapai County Cooperative Extension faculty and staff often provide educational programs to the various camping groups.

One of the groups to use the James 4-H Camp was *Camp Corral*. Camp Corral is a 501(c)(3) tax-exempt, non-profit corporation, that organizes one-of-a-kind summer camps for children of wounded, disabled or fallen military service members. Since its founding in 2001, Camp Corral has grown to 20 camps in 16 states, and served over 4,000 children. Between July 26 and August 2, 2013, 82 youth attended Camp Corral at the James 4-H Camp. Again, Yavapai County Cooperative Extension assisted with educational programs for this camp.

Since acquiring the James 4-H Camp in 2010, many facilities improvements have been accomplished including new, water conserving bathroom fixtures, solar energy for LED lighting, with plans for recapture of shower water for toilets and the addition of composting toilets. These upgrades were made possible through a \$30,000 University of Arizona Green Fund Grant.

Family Consumer Health Sciences

Food Safety/ Local Foods



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Certified Professional Food Manager Training

Salmonella, E. Coli, Norovirus! Do these foodborne illness names and others send chills down your spine? This year one out of six Americans will get sick from a foodborne illness. According to the Center for Disease Control (CDC), every year millions of people suffer from foodborne illness, hundreds of thousands are hospitalized and thousands die. The food safety education program at Yavapai County Cooperative Extension provides research-based food safety information and education through one-to-one contacts, telephone, e-mail, publications and community workshops for industry representatives and consumers of Yavapai County to ensure that their food is safe. Web site links are available for industry, consumers, and educators at The University of Arizona Cooperative Extension Web site: <http://extension.arizona.edu/yavapai-food-safety>.

Yavapai County restaurant managers taking the Certified Professional Food Manager Training adopt safe food handling practices which lead to safe food served which will benefit other community members by reducing food borne illness among patrons and associated health care costs.

Certified Professional Food Safety Management Training

Over the past year, 181 Yavapai County food establishment managers were trained through the Prometric Certified Professional Food Managers' Program. This nationally-recognized, six-hour certification course is aligned with the newly updated 2009 FDA Model Food Code and is offered monthly in Prescott and bimonthly in Cottonwood. Required by the Yavapai County Environmental Health Department, this course helps restaurant managers and employees increase their knowledge of food safety principles and make informed decisions to reduce risk factors and the incidence of foodborne illness. Evaluations from the participants have included the following comments: "Very professional training"; "It touches on everything that you need to know"; and the trainer "was very personable, knowledgeable, approachable and made it easy to learn."

Food Safety Industry Council

Established in 2002, the Yavapai County Food Safety Industry Council, continues its mission to promote and maximize food safety through education, research and policy provided by leadership of representatives from the food industry, consumers, academia and the regulatory agency. The Yavapai County Board of Supervisors (BOS) appoints the 13 members who include food establishment representatives and consumers. Ex-officio members include representatives from the Yavapai County Health Department and the University of Arizona Yavapai County Cooperative Extension. Significant accomplishments this past year included: Restructuring the Council membership and terms in response to the new Board of Supervisor districts in Yavapai County; updating the Council policies and procedures to coincide with the new structure; reviewing and approving the Pet Friendly Patio Variance; and updating and the Golden Plate Award to include two approved categories to distinguish between food facility types.



Kale and Swiss Chard at Whipstone Farm, Paulden AZ. Cooperative Extension is collaborating with local schools and producers to serve more fresh, local produce to Yavapai County students and residents.

Consumer Education

As part of their Yavapai County Cooperative Extension's community outreach, Program Coordinators Lori Brandman and Hope Wilson addressed issues of concern of consumers through educational seminars and trainings, as well as through phone calls, e-mails, and one-to-one visits. This past year several programs were presented to specific audiences including two senior citizen centers and one community group. Program Coordinator, Hope Wilson, began working with other Cooperative Extension staff and faculty this past year to develop food preservation classes for community members in Yavapai County. Our goal is to provide practical knowledge and information so consumers understand the importance of food safety and disease prevention. Food safety and nutrition programs are available for interested audiences by contacting our offices.

Farm to School Collaboration

Prescott Unified School District (PUSD) secured a Farm to School Planning Grant. Farm to School introduces locally grown fruits and vegetable into the school lunch programs at district school cafeterias. It also integrates educational components around food production, such as farming and soil, field trips to tour working farms, and bringing local growers into classrooms to speak with students. The Planning Grant will bring together interested parties and build local capacity to meet the above stated goals. Wren Myers of Paradigm Permaculture Coalition was hired by PUSD as a consultant on the project. Cooperative Extension provided technical and in-kind support (Food Safety Training, classroom space, and office space to Ms. Myers). PUSD is collaborating with other schools in the Prescott, Prescott Valley, and Chino Valley areas.

Turfgrass/Pest Management in Schools



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Turfgrass Education and Research

University of Arizona Cooperative Extension Area Turfgrass Agent, Kai Umeda, works with professional turf managers and golf course superintendents to provide timely education and problem-solving research. His Yavapai County work has been focused on insect pests and weed management. Agent Umeda has several on-site studies that address priority issues, solve critical needs, and deliver timely information to the turf industry professionals so that they can make sound judgements and decisions. Kai also offers multiday educational programs such as the Desert Turfgrass School where turfgrass professionals across Arizona learn about research results and innovative turfgrass management practices. Attendees increased and/or improved their knowledge about irrigation management, soils and fertility, and turf pest management. Seminars, workshops, and field demonstrations are conducted when needed and in a timely manner such that information is being disseminated and then practices are adopted and incorporated into turf management operations such as irrigation and soil management, insect pest management, and herbicide use.



Biometeorologist, Dr. Paul Brown, discussing the components of an Arizona Meteorological Network (AZMET) weather station at the Desert Turf School. Prescott has an AZMET Station located at Watson Lake. Data is accessible via the Internet at ag.arizona.edu/azmet/31.htm.

Pest Management in Schools

University of Arizona Cooperative Extension Specialist, Dawn Gouge led a team that presented an all day workshop called *Integrated Pest Management in a Child's World*. Integrated Pest Management, or IPM, is an ecologically-based pest management strategy that provides long-term management of pest problems with minimum impact on human health, the environment and non-target organisms. IPM programs are educationally based and apply our knowledge of pest biology and its relationship within the environment to prevent and resolve pest problems. IPM is a much more effective alternative to scheduled applications of chemical pesticides. Children's special vulnerability to pesticides includes both increased opportunity for exposure and increased susceptibility compared to adults.



The workshop was presented on April 30, 2013 in Prescott and covered the following pest management principles:

- Deny pests access to food, water and shelter (habitat manipulation)
- Exclude pests from buildings
- Improve hygiene standards
- Use species or varieties of plants that are resistant to pests
- Select target-specific and reduced-risk pesticides with low mammalian toxicity and low environmental impact
- IPM in the landscape includes cultivation, pruning, irrigation and fertilization practices that reduce pest problems

Twenty attendees from area schools in addition to local structural pesticide applicators learned to apply school IPM principles, received specific information for Yavapai County pests, and earned continuing education credits to maintain their pesticide applicator certification.

Specific pests of concern in Yavapai County schools are: cockroaches, ants, mosquitoes, bedbugs, head lice, house mice, woodrats, scorpions, birds, and bats. Each of these pests can expose children to health risks. Conversely, conventional pesticides used to manage these pests can also expose students to health risks. School IPM works to reduce pests while using least toxic control measures that minimize health impacts to the student population.

Dr. Gouge and her colleagues were recently awarded a large EPA grant to continue this work in Arizona. Cooperative Extension will continue to offer school IPM education in Yavapai County where it will reduce pests and create a healthier learning environment for students.

Yavapai County Master Gardener Program

The Yavapai County Master Gardener program teaches interested citizens to become valuable horticultural volunteers in their communities. Cooperative Extension Agent, Jeff Schalau, taught and coordinated the 2013 Master Gardener Training Course in Camp Verde and managed the program in conjunction with Mary Barnes, Master Gardener Volunteer Coordinator.

After 16 weeks of practical training, class members become Associate Master Gardeners. The Training Course is offered to 40 residents each spring and alternates yearly between Prescott and the Verde Valley. After volunteering 50 hours, participants become Certified Master Gardeners. Each subsequent year, Master Gardeners provide a minimum of 25 hours of volunteer service and six hours of continuing education to maintain their certification.

In 2013, 162 Master Gardeners contributed 12,877 hours of volunteer service to citizens and institutions of Yavapai County. This included 3,455 face-to-face, 946 phone, and

137 E-mail contacts. Master Gardener Volunteer Coordinator, Mary Barnes, maintained records, facilitated communication, conducted program planning, and tracked volunteer activities. She also designed and continues to update the Yavapai County Master Gardener web site. Ms. Barnes' valuable volunteer service is integral to Yavapai County Cooperative Extension's success. Master Gardener, Nora Graf, edited and managed the monthly newsletter *Yavapai Gardens* and maintained the Yavapai County MG blog. Master Gardeners also provided volunteer service to school gardens (3), community gardens (5), one museum, one hospital, public parks (4), staffed educational displays at 12 public events, coordinated Master Gardener Association meetings/activities (10), and organized the Yavapai County Master Gardener recognition picnic. The Master Gardener Speaker's Bureau also gave presentations to 19 community groups and two Osher Lifelong Learning Institute classes which reached 592 people. Yavapai County Cooperative Extension continues to have one of the most ambitious and successful Master Gardener Programs in the



Yavapai County Master Gardeners touring the Prescott Valley Community Garden learning about vegetable pests and diseases.

Beginning Farmers Course Offered

A Beginning Farmers course was offered February and March 2013 in Prescott. The course taught participants about business planning, financial record keeping, hoop house construction, growing crops, vegetable crops, irrigation, and plant nutrition. University of Arizona Cooperative Extension Specialists Russ Tronstad, Ursula Schuch, and Trent Teegerstron presented this program to 42 participants in four half-day sessions. Topics covered were business/crop planning, hoophouse construction/siting, plant nutrition, irrigation, and marketing. Local growers and the Prescott Farmer's Market manager also presented to the group. A 12' x 100' hoophouse was also constructed at Whipstone Farm (in Paulden—photo at right) by participants during one of the sessions. There was plenty of interest in this topic and the course will be taught again in the Verde Valley.

Master Gardener Help Desk Survey Results

A follow-up survey of Master Gardener Help Desk clients was conducted in 2013. Forty seven (47) clients were surveyed by phoned regarding their satisfaction with the information received. The results indicated clients that consulted Yavapai County Master Gardener volunteers applied the recommended actions, found them effective, and were satisfied with the services they received. Specifically, clients were asked if they "applied the knowledge gained through action(s)" and "was the action taken effective in addressing their situation". In both cases, 96% of the clients said they took the recommended action and the action was effective in addressing their issues. 95% of the clients survey said they were satisfied with services/advice received (n=42). These results indicate the Master Gardener Help Desks in Camp Verde and Prescott are meeting their goal of providing science-based garden/landscape information and the clients are applying the information and having successful results.



Beginning Farmers laying out a hoop house prior to construction. A completed hoop house is visible in the background.

Horticulture Programs (cont.)



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Backyard Gardener Newspaper Column and Blog

Agriculture and Natural Resources Agent, Jeff Schalau, wrote the *Backyard Gardener*, a weekly gardening column, that appeared in four Verde Valley newspapers (19,500 combined circulation). He also maintained the Backyard Gardener web site (a blog) which contains all columns written from April 1998 to the present. The site is searchable, has a chronological archive, and contains a clientele feedback form which generates hundreds of E-mail questions/comments each year. The Backyard Gardener web site contains over 800 columns and had 300,009 page views during 2013. This is a major marketing tool for Yavapai County Cooperative Extension horticulture programs/events and the web site is used extensively to answer client e-mail questions.

Using Social Media in Horticulture Education

Agent Schalau also used Twitter and Facebook were used to promote the Backyard Gardener on-line columns by "tweeting" and posting each new column to the Yavapai County Master Gardener Facebook Page as it became available. Jeff Schalau's Twitter feed had 186 followers, up from 120 followers in 2012. The Twitter feed is also used to inform program participants with up to date program information such as cancellations due to weather. The Yavapai County Master Gardener Facebook Page currently has 186 "Likes" and 674 people shared stories about our page in 2013.

Animal Science & Range Management

Several ranches in Yavapai County have ongoing rangeland monitoring programs. Here, annual data collection is combined with site-specific discussions among agency resource management professionals, ranchers, and members of the public. Animal Science Area Agent, Jim Sprinkle; Agriculture and Agriculture/Natural Resources Agent, Jeff Schalau; and University of Arizona Range Specialist, Doug Tolleson, collaborated on rangeland monitoring programs and subsequent data collection. Monitoring programs at the Yavapai Ranch (Seligman) and Bar Heart Ranch (Upper Verde River) have been ongoing. We have also formed the Rim Grass Range Group which is conducting educational sessions and includes several Verde Valley ranches adjacent to the V Bar V Ranch Experiment Station. These monitoring efforts brought ranchers and land management agency professionals together and guided them in making effective management decisions that ensure livestock grazing is sustainable. Diverse groups working together ultimately helped build trust between ranchers, agency professionals, and concerned citizens groups.



Deciduous Fruit Tree Pruning Demonstrations

Jeff Schalau conducted four *Deciduous Fruit Tree Pruning Workshops* in 2013. These were presented in Cottonwood, Camp Verde, Chino Valley, and Yarnell, during February and March. 142 participants attended the workshops. Two of the four workshops were held at collaborator's orchards where we have been conducting these programs for multiple years. This provides attendees with current education in addition to seeing the results of pruning the prior year. A team of Master Gardener volunteers have also assisted Agent Schalau in creating a set of deciduous fruit tree pruning videotaped mini-courses that will be posted to the Internet (YouTube) in 2014.



Deciduous fruit tree pruning at the Cottonwood Community Orchard.

Invasive Species Management

Invasive and noxious weeds are spreading across open spaces and water bodies throughout North America. In Yavapai County, there are significant populations of: yellow star thistle, Malta star thistle, Russian knapweed, spotted knapweed, diffuse knapweed, Scotch thistle, Canada thistle, annual brome grasses, and many others. New invasive plants continue to be introduced by contaminated seed, heavy equipment, recreationists, and wildlife. As an example, camelthorn was recently discovered near the Prescott Airport. In addition, the nursery and landscape industries could potentially introduce plants which could become invasive (Pampas grass is one example). Invasive animals are also a threat: the Emerald Ash Borer has been detected in Boulder, Colorado. When this insect reaches Arizona, there will be serious impacts on native ashes and those planted in landscapes.

Yavapai County Cooperative Extension Agent, Jeff Schalau, provided invasive species educational programs, consultation, and information to Yavapai County residents through workshops and site visits.

Water Resources Education



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Cooperative Extension's water resources education programs assist homeowners, businesses and growers to conserve water and help ensure safe, healthy drinking water for all residents and future generations.

Edessa Carr, provided water resource education training/support and other water education programs in Yavapai County in 2013. Ms. Carr's programs reached a total of 3,173 youth and 373 adults. Wild Over Water (WOW) is Ms. Carr's outreach program in classrooms which utilized six trained volunteers and reached an additional 1,440 students. WOW volunteers present Arizona Project WET activities in Yavapai County school classrooms. The Verde Valley Water Festival (VVWF) was held at Dead Horse Ranch State Park on October 24, 2013 also engaged 80 volunteers and reached 423 students. Prior to the VVWF, Ms. Carr trained 26 high school students during four sessions to assist in delivering the lessons during the festival. Edessa also provided hands-on educational experiences to five groups at the James 4-H Camp which reached 276 students and led field study experiences at the Verde River Headwaters to an additional 110 students. Several other programs were also offered to the general public including: low-cost, well water testing and education program (320 participants); one well owner workshop was presented to 37 participants, and one rainwater harvesting workshop (40 participants). Edessa also provided two continuing education/recognition events for her WOW docents and staffed tables at Verde River Days and the Verde Birding Festival.

A ten-session Master Watershed Steward Course was presented during fall of 2013 in Prescott to 19 participants. Upon finishing the training course, Master Watershed Stewards volunteer in their local communities in a variety of roles (educators, data collectors, observers, etc.) to improve local understanding and conservation of water resources.



Wild Over Water volunteers with Edessa Carr (third from left) at the James 4-H Camp at Mingus Springs.

Public Health at the Iron King Mine

The Town of Dewey/Humboldt has been collaborating with the University of Arizona's Colleges of Agriculture, Public Health, Medicine, and Pharmacy to conduct multiple studies on the potentially hazardous effects of heavy metals at the Iron King Mine site, Humboldt Smelter and the surrounding community. These studies have included phytoremediation (using plants to decrease environmental hazards), assessing risks associated with contamination of food crops with heavy metals (GardenRoots), water quality studies, and a Metals Exposure Study in Homes (MESH). All of these studies have been funded through the University of Arizona Superfund Research Program in partnership with the National Institute of Environmental Health Sciences and the Superfund Research Project.

The MESH was initiated in 2012 and seeks to better understand the exposures of residents to metals, specifically children ages 1-11 years, living near the Iron King Mine and Humboldt Smelter Superfund Site in Dewey-Humboldt, Arizona. The study will measure concentrations of metals in drinking water, house dust, and soil in and around homes. In addition, researchers will ask families about their house and their children's health history, lifestyle, diet, and activities. Finally, they will measure metals in children's blood, urine, and toenails. All of this information will help us determine the level of metal exposure in the household and whether these exposure levels are higher nearby the Iron King Mine or Humboldt Smelter.

These studies have engaged many community members and worked collaboratively with Yavapai County Cooperative Extension and the Lonesome Valley Wranglers, the Dewey-Humboldt 4-H Community Club.



Mine tailings at the Iron King Mine near the Town of Dewey-Humboldt. These tailings contain arsenic, lead and other heavy metals.

Visiting University of Arizona Faculty—2013



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