

SUMMER WAVE



COLLEGE OF AGRICULTURE & LIFE SCIENCES
COOPERATIVE EXTENSION
**WATER RESOURCES
RESEARCH CENTER**

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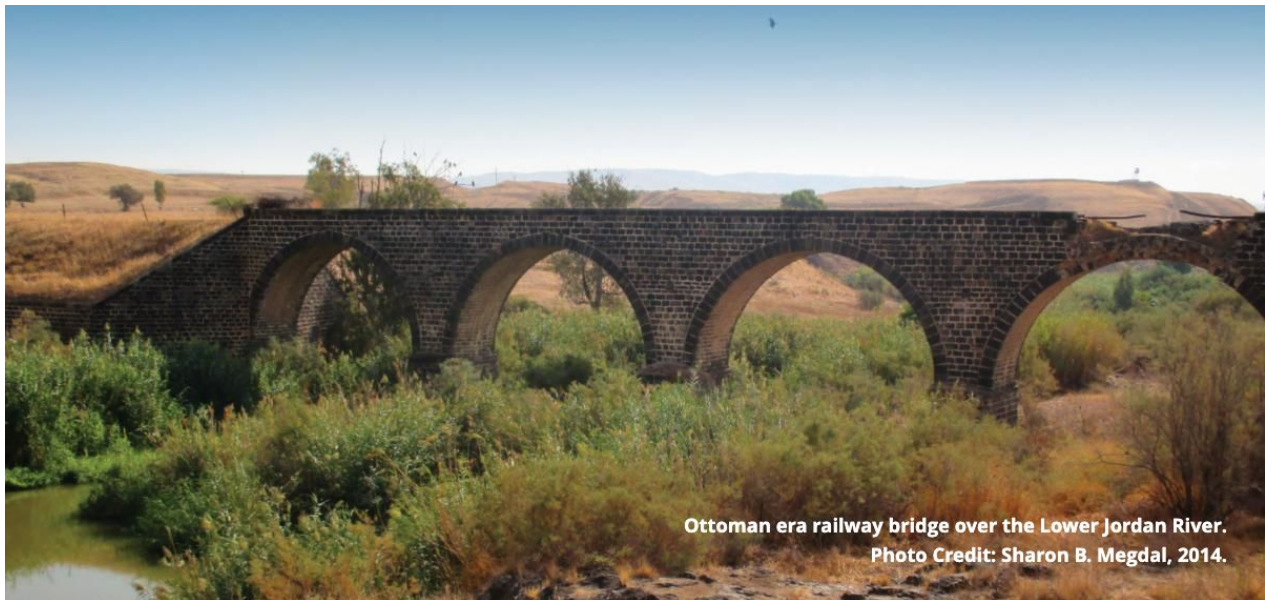
The Water Resource Research Center - a research unit of the [College of Agriculture and Life Sciences](#) and an Extension unit in [UA Cooperative Extension](#) within the Division of Agriculture, Life & Veterinary Sciences & Cooperative Extension

WRRC Office Update

Although the WRRC building will be closed to the public until further notice, our staff continue to work and engage as much as possible. You can reach us via email as listed on our [Directory](#). We wish you all the best - Stay safe and healthy!

UArizona Cooperative Extension [COVID-19 info page](#)
WRRC [COVID-19 Articles](#)

In this issue: [Wildfires](#) / [County Profiles](#) / [APW](#) / [Monsoon Harvesting](#) / [COVID-19](#)



Ottoman era railway bridge over the Lower Jordan River.
Photo Credit: Sharon B. Megdal, 2014.

Reflections: On Wicked Water Problems

Although my spring-summer sabbatical lecture tour did not take place as planned due to COVID-19, I did deliver more than a dozen lectures and participated in several programs and interviews. My topic of wicked water problems was the most requested and one on which I will continue to focus. Not only does this topic afford me an opportunity to explore significant water challenges at varying

geographic and geopolitical scales, it enables me to focus on the process for forging pathways to addressing them.

[Read More](#)

WRRC EVENTS

Brown Bag Webinars:

Toward a Sense of the Basin: Designing a Collaborative Process to Develop the Next Set of Guidelines for the Colorado River System

Date: Tuesday, September 1, 2020

Time: 12:00 - 1:15 p.m.

Location: [Webinar Only](#)

Speakers: Matthew McKinney, *Director, Center for Natural Resources & Environmental Policy, University of Montana, and Co-facilitator of the Water & Tribes Initiative - Colorado River Basin*; Daryl Vigil, *Water Administrator, Jicarilla Apache Nation, and Co-facilitator of the Water & Tribes Initiative - Colorado River Basin*



Arizona Water Blueprint: A Roadmap to Good Stewardship

Date: Thursday, September 17, 2020

Time: 12:00 - 1:15 p.m.

Location: [Webinar Only](#)

Speakers: Sarah Porter, *Director, Kyl Center for Water Policy*; Susan Craig, *Water Policy Analyst, Kyl Center for Water Policy*

OTHER EVENTS

Strengthening US Israel Relations through Agricultural Partnership Arizona - Israel & BARD

Date: Wednesday, August 12th 2020

Time: 9:00-10:00 PDT/ 19:00-20:00 IST

Speakers: Doug Nicholls, *Mayor, Yuma, AZ*; Sharon B. Megdal, *Director, UArizona WRRC*, and Dan Blumberg, *Professor, Ben-Gurion University of the Negev, Department of Geography and Environmental Development*; Yoram Kapulnik, *Executive Director, U.S.- Israel Binational Agricultural Research and Development Fund (BARD)*

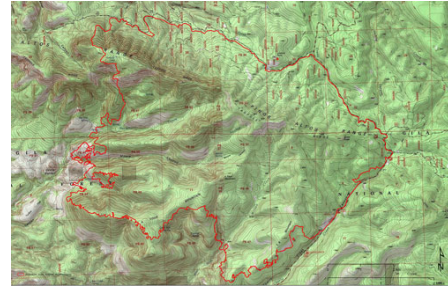


The Arizona Israel Trade and Investment Office in collaboration with BARD - Binational Agricultural Research and Development FUND will discuss US-Israel bilateral cooperation in agriculture and water.

Webinar [registration](#)

Post-Wildfires Debris Flows Subject of AZGS Blog Post

After a wildfire, monsoon rains bring threats as well as blessings. While supplying much needed moisture, downpours can launch damaging debris flows from fire-scarred slopes. In a July 13, 2020 post to the Arizona Geology e-magazine, researchers discuss an ongoing project to answer a very timely question: "After a wildfire, how intense does rainfall need to be to cause a debris flow?" Researchers Ann Youberg (AZGS), Luke McGuire (UArizona Department of Geosciences), and Francis Rengers (USGS) are installing instruments in wildfire burn scars to monitor rainfall and record the timing and velocity of flood and debris flows. The data will help elucidate how landscapes scarred by wildfires, such as the recent Big Horn Fire in the Santa Catalina Mountains, respond to monsoon storms. According to the blog post, the results of this research will provide valuable information for the National Weather Service and state and local warning systems.



Read the full blog post [here](#)

CALS Posts Agricultural Economy Profiles

A collection of new fact sheets containing synthesized county-level data from the 2017 Census of Agriculture is available online from UArizona College of Agriculture and Life Sciences. These profiles of all 15 Arizona counties offer the most recently released data on agricultural production, water use, and regional economic context in a standard, accessible format. As the data show, agriculture plays a pivotal role in county economies and the management of land and natural resources. The authors, Dari Duval, Ashley K. Bickel, and George Frisvold, created these county profiles as part of the MAP (Making Action Possible) Dashboard, an initiative of the Eller College's Economic and Business Research Center focusing on the economy of Southern Arizona.

Statewide Summary

Overview

Arizona is a large urban state, with roughly 90% of the state's population in urban areas. It includes the country's 10th largest metro area, the Phoenix-Mesa- Chandler metropolitan statistical area (MSA), with 4.9 million residents.

Major industries include mining, high-tech manufacturing, business services, and tourism. Agriculture accounts for approximately 1.1% of private employment in the state and less than 1% of state GDP. Nonetheless, approximately 50% of Arizona's land area is used for agricultural purposes, either crop or livestock production. Agriculture in Arizona is diverse, characterized by highly productive irrigated crop production in the central, western, and southern parts of the state, and by livestock grazing over rangelands in the northern and eastern parts of the state. Arizona is known as a leading state in the production of winter vegetables, particularly in the Yuma area. Much of the state's livestock and animal product production by value occurs in large dairies in central Arizona that serve the state's main population centers.

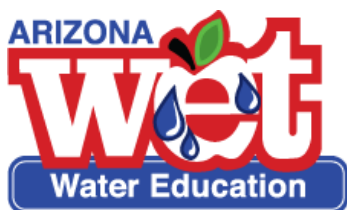
The types of crops and livestock produced, the amount of water used for agricultural purposes, and the value of agricultural in current operations varies significantly across the state. **The inclusion of county profiles provides agricultural production, water use, and regional economic data in a standardized, integrated, and easy-to-read format to provide context on the role of agriculture within state and county economies, as well as its role as a manager of land and natural resources.**

Map of Arizona by County

Industry	Location Quotient	Indicator	Arizona
Copper, nickel, lead, & zinc mining	30.78	Land Area (square miles)	113,990
Mobile telecommunications	11.54	Land in Farms (Crops, Grazing) (square miles)	40,822
Professional employer organizations	6.67	Population (2018)	7,171,466
Research & development in nanotech.	5.48	Annual Average Population Growth Rate (2010-2018)	1.4%
Other credit intermediation activities	5.45	Percent of Population Over 65 (2018)	17.9%
Semiconductors & related device mfg.	5.09	Percent Population Rural (2018)	10.2%
Solar electric power generation	4.87	Total Employment (2018)	2,805,095
Financial trans. processing & clearing	4.84	Share Federal, State, & Local Government Employment (2018)	13.8%
Citrus, except oranges, groves	4.79	GDP (2018)	\$38.3 billion
Translation & interpretation services	4.52	Ag. Forestry, & Hunting GDP (2018) (on-farm only)	\$2.3 billion
Bus & other motor veh. transit systems	4.47		
Hay farming	3.78		
Small arms & explosives manufacturing	3.75		
Book & magazine manufacturing, wh.	3.56		
Cotton farming	3.43		
Support act. for agricultural machin.	3.32		
Crop harvesting, grain, by machine	3.42		
Truckwharftng & other contact comms	3.37		
Leases of other real estate property	3.36		
Flight training	3.29		

Find the Arizona County [Agricultural Economy Profiles](#)
Read the [MAP Dashboard report](#)

Let it Rain!



Twenty-five 4th-12th grade teachers are echoing the headline's sentiment after participating in APW's online AquaSTEM Rainwater Harvesting System Design Academy. This 6-week

professional development workshop started with teachers exploring extreme heat in our community, which led them to design a rainwater harvesting system to grow shade with available rainfall. Each week the teachers participated in a one-hour zoom lecture that introduced them to weekly topics and assignments. Just as their students will do, teachers completed work that included inspecting their site, analyzing soil, quantifying the amount of



harvested rain, selecting plants, calculating watering requirements, performing a water budget, sizing a basin, and sketching their design. As teachers moved through the iterative engineering design process, they made mistakes and re-designed. One teacher commented, "This process is eye-opening and the tools are excellent. I look forward to completing the course and making more errors! I am learning for sure and can see how to impart some knowledge to students as well." At the culmination of the class, the teachers presented their final designs for peer review. They all agreed that the class was "challenging" and "fun" as highlighted in the word cloud. A few other teachers, highlighted on [APW's Facebook page](#), are taking the opportunity to install their designs at their own homes

Arizona Project WET

Monsoons Bring Harvesting Opportunities

The monsoons are here! As clouds dance across the state, Arizonans look skyward: anticipating, predicting, and tracking. There is a lot of rainfall variability, so sometimes we find ourselves green with envy as another neighborhood gets the rain, but at other times we are happily rewarded with a downpour. One of the great delights for water aficionados is watching our rainwater harvesting in action.

Whether observing cisterns fill or basins pour into one another, watching water flow and nourish our landscape is one of the great joys of summer. There are many resources on the internet for designing and installing rainwater harvesting systems. You can find resources for evaluating your harvesting potential by using the [WRRC Water Harvesting Assessment Toolbox](#) or you can take a Zoom water harvesting class through the Pima County Cooperative Extension [Smartscape program](#). If you have been thinking about creating or improving your rainwater harvesting system, now is the time to go for it. During monsoons you can construct your system, try it out, and then adjust for the next deluge.



Water Your Home [article](#)

AWRA Publishes Open-access IMPACT on Water and COVID-19

IMPACT, a journal of the American Water Resources Association (AWRA), spotlights water and COVID-19 in a new special issue. As editor of this special issue, Lisa Beutler, Stantec Consulting Service Inc., has collected a wide range of articles on water topics related to the COVID-19 pandemic. Because of the water sector's unique role in the fight against this novel coronavirus, the special issue features the experiences of water professionals who are working toward water security, water supply safety, wastewater surveillance, and supply and sanitation justice. Beutler, the past president of AWRA, is known to Weekly Wave readers for her [WRRC annual conference](#) presentation and her WRRC newsletter article on [wicked water problems](#). In this issue of IMPACT, she takes up the concerns of water and wastewater treatment practitioners, including coronaviruses in sewage and wastewater

treatment plants; coronavirus removal and inactivation by water treatment; and progress in using wastewater for COVID-19 surveillance. In addition, an article focuses on lessons from Flint, MI, about the intersection of racial and social inequality with pandemic risks and impacts. Another friend of the WRRC, William M. Alley, along with co-author Charles A. Job, use an assessment of COVID-19 risks to drinking water from private wells--risks that are low--as a reminder of the importance of proper care and maintenance of wells and septic systems in protecting against all types of pathogens. Also in this special issue, Beutler interviews Alley and his wife and co-author Rosemarie Alley about their new book, The War on the EPA: America's Endangered Environmental Protections.



ANNOUNCEMENTS

- [Aug 10: ADEQ Five Year Review - Water Quality Fees Feedback Form Due](#)
- [Aug 11: AHS Monthly Chapter Meeting, Tucson Chapter: Tucson Water's Enhanced Water Well Installation Program](#)
- [Aug 12: Strengthening Arizona Israel Relations through Agricultural Partnership](#)
- [Aug 13-14: Arizona Water Law 29th Annual Conference - New Virtual Format](#)
- [Aug 15-Sept 15: BARD The US-Israel Binational Agricultural R&D - Call for Proposals](#)
- [Aug 26: UA Engineering Zoom Lecture: Sustaining Tribal Communities - Desalination, Solar Power and Other Forms of Off-grid Technology for Water, Energy, and Food](#)
- [Aug 31: Wyland Mayors' Water Challenge Water Pledge](#)
- [Sept 14-15: Tribal Water Law Conference](#)
- [Sept 23-24: AWWA Virtual Summit - Early Bird Registration](#)
- [Sept 28-30: Groundwater Protection Council 2020 Annual Forum - Save the Date](#)
- [Oct 7-9: BSMAR 17 Symposium - Registration Open](#)
- [Oct 14-15: 2020 Transboundary Groundwater Conference - Save the Date](#)
- [Oct 16: RiversEdge West Annual Research and Management Conference - Abstracts Due](#)
- [Oct 20: US Bureau of Reclamation Guardians of the Reservoir Challenge - Submissions Due](#)
- [Nov 7: Research Insights in Semiarid Ecosystems \(RISE\) Symposium - Registration Open](#)
- [Nov 9-12: AWRA 2020 Annual Water Resources Conference](#)
- [Jan 5-8, 2021: NCSE 2021 Annual Conference - Hot Water: Science and Solutions for a Planet Under Pressure - Save the Date](#)
- [May 9-14, 2021: IWA World Water Congress & Exhibition Water for Smart Liveable Cities \(Copenhagen\)](#)
- [June 13-16, 2021: ACE21](#)

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