School & Home Integrated Pest Management (IPM) Newsletter: June-July 2024

THE UNIVERSITY OF ARIZONA
Agriculture, Life & Veterinary Sciences & Cooperative Extension

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10 things you (probably) didn't know about cicadas

Daniel Stolte[1] and Gene Hall[2]

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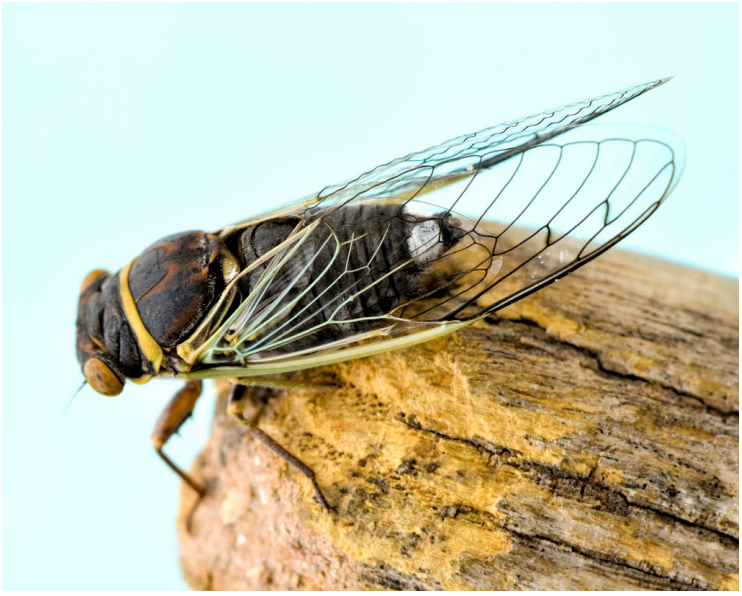
This article contains excerpts from an article that appeared in University of Arizona News previously. Listen to an audio version or read the original article here What's the buzz? 10 things you (probably) didn't know about cicadas | University of Arizona News.



An Apache cicada, one of the most common species in Arizona.
Photo: Michael Konecky, iNaturalist.org

One doesn't have to live in the Arizona desert long to learn that once the first cicadas of the year start broadcasting their piercing buzz from invisible locations in the trees, it's time to kiss spring goodbye and say hello to the blast furnace that is June in much of the state. University of Arizona News talked with Gene Hall, manager of the University of Arizona Insect Collection, about cicadas and what makes them so unique.

Cicadas stay underground for years and can emerge en masse.

Cicadas have made national headlines this year, appearing in massive numbers almost overnight in some parts of the eastern U.S. Meanwhile, Arizonans have yet to hear them. "Cicada life cycles can range from three years for our local species to up to 17 years for those in the Midwest and eastern United States," Hall says. "It is thought that these mass emergence events that you have seen in the news may have evolved as a strategy to deal with predators. I have read about estimates that some places see a million or so cicadas emerge per acre. And when you've got such large numbers of individual cicadas out, there's just no way predators can keep up with that. It's like survival by numbers in a way."

"In the species we have around here (in Tucson), the underground stage lasts anywhere from a couple to three to five years," Hall says. "We don't have the big brooding cycles like periodical cicadas, and a reason for that might be that here in the Southwest, they can avoid predators simply by being out during the hottest part of the day, when nobody else can or wants to. Animals that otherwise would go after them, like lizards, birds and mammals, are trying to stay out of the heat."

Cicadas can make their own armor overnight.

Scientists believe nymphs emerge from underground when certain environmental cues fall into place and the conditions become just right – for example, as soon as the ground reaches a certain temperature, Hall says.

"They emerge usually in the evenings or at night, and the next day you might find their nymphal skin where they've emerged from," he says. "They're very vulnerable when they emerge, because the body of the adult starts out soft. It takes a while to harden up and for the wings to fully push out and develop. It probably takes a few hours. It can't be too long because they have to be active the next morning. The adult lives only for two to three weeks, which is kind of typical for most insects."

An adult cicada, its exoskeleton still soft, sits next to the molt from which it has just emerged. Photo: Gene Hall.

Built-in air con: Cicadas can turn themselves into an evaporative cooler.

Why are cicadas active during the hottest part of the day?
"Because they can," Hall says. "Cicadas have figured out a way of sweating, if you will. They feed on plant sap, so they are constantly sucking in liquids, and as the temperature gets hotter

and hotter, and they start to overheat, they remove the water from their blood and pass it through ducts in their body. As it exits their body through pores on their thorax, they get that continuous evaporative cooling. When people talk about how it seems like it just feels hotter when they hear the cicadas, that's because they're out when it is hot. That trick allows them to be active when it's too hot for the predators that feed on them. Many reptiles and birds and mammals that would normally go after them seek shelter from the heat when it gets to be 110 degrees or more, but cicadas can still be active and feeding and sending out mating calls."

Cicadas are essentially tiny violins with wings.

The body of a cicada is similar to that of a violin or a guitar, in that much of it consists of empty, air-filled spaces that act like a resonating chamber and amplify the sound they generate.
"The loud noise we hear is the male's mating call — females are silent," Hall says. "Some species produce that loud whirl that we hear around here, while others make more of a soft clicking sound. Each species of cicada has its own mating call, which can range from soft clicking to loud buzzing. The calls vary from species to species. Some males will stay in the same spot and call continuously, whereas others will fly off and call from another spot. They also use noise to drown each other out or cancel calls from other competing for females. To pick up the sound, both sexes have structures located in the front of the abdominal area, under the wings, called tympana, which basically function like an eardrum."

Cicadas are super sneaky.

Ever tried to locate a cicada you are hearing, only to find nothing there?
"They're very difficult to get to," Hall says. "You can hear them, but once you start walking to a tree, it's very hard to home in on them. I think it's because the sound is so big, it's hard to narrow where it's coming from, even if you think you know where it's coming from. That is a good strategy of distracting a predator. If you walk up to a branch or a twig that the cicada is on, it'll move around to the back side and hide. Also, they stop calling as soon as you get too close, making it even more difficult to find them."

Cicadas have enemies that are the stuff of nightmares.

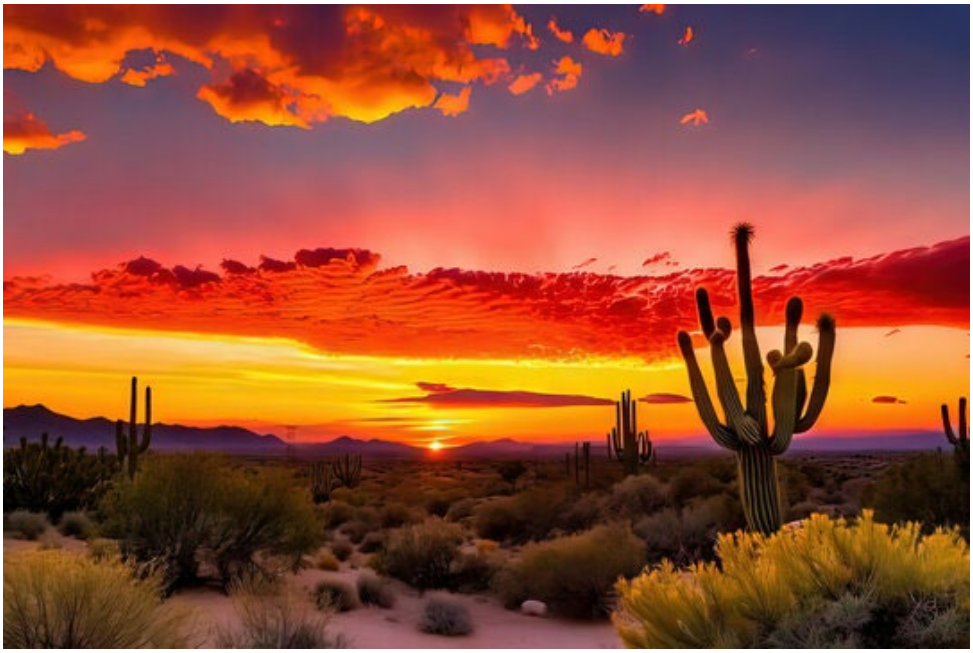
"One of their enemies is the cicada killer wasp," Hall says. "These are wasps that home in on cicadas, much like the tarantula wasp seeks out tarantulas. The female wasp flies around searching for cicadas, and when it finds one, it stings it and paralyzes it, then carries it to a burrow, lays one egg on it, and then closes the burrow up. It's a good-size wasp, because you have to figure it has to be able to grab the cicada and fly with it. The cicada remains alive underground while the wasp larva is feeding on it. And the larva feeds at such a rate that it doesn't immediately kill the cicada. During their underground life, some cicadas become infected with the spores of a fungus that will then grow inside their bodies, eventually killing them and sprouting a fruiting body from their heads."

Summer Weeds – Identification and Management

Shaku Nair, University of Arizona

You would think the Arizona summer stresses out all plants but look again – some of those weeds in your landscape are growing faster than ever!

Summer annual weeds are weeds that germinate in spring and grow, flower and set seed through the summer. As with any good weed management plan, it is essential to identify your weeds correctly. Let us look at a few common summer annual weeds that thrive in our landscapes even in the extreme heat.



Summer weeds can thrive even in Arizona's extreme heat! Photo: Adobe Stock.

Spurges are some of the most common summer broadleaved annuals. Hyssop (*Chamaesyce (Euphorbia) hyssopifolia*), spotted (*C. maculata*) and prostrate or creeping spurges (*C. prostrata, C. peplus, C. serpens*) are common species.

Spotted spurge. Photo: Forest and Kim Starr.

Spurges are low, partially upright growing herbaceous plants up to 1 foot in height when competing for light. The stems are slender, light-green or tan with a pinkish or reddish tinge, and exude milky sap when crushed or broken. The leaves are oppositely arranged, oval or elongated oval in shape, with rounded tips and lopsided bases, short-stalked, dark grayish green in color, with a dark red or purple spot or patch in the center and fine teeth along margins in some

species. Female flowers have a dangling, 3-sided ovary below the petals. Fruits are tiny, 3-lobed, egg shaped, hairy capsules that burst open to disperse light-brown, oblong seeds.

Common purslane (*Portulaca oleracea*) is another creeping and spreading, succulent herbaceous plant, usually about 6 inches in height, but spreading up to 3 feet or more. Branches start from the base of the main stem and are thick, smooth and reddish green in color. Leaves are thick, succulent and oval or egg-shaped, dark green with reddish tinge, stalkless or very short-stalked. Flowers are produced singly or in small groups of 2-5 at stem tips. They are small with 5 bright yellow petals.

Common purslane. Photo: Júlio Reis.

Khakiweed (*Alternanthera caracasana*) is a creeping herbaceous plant, trailing to about 2 feet. Stems are light green in color, sometimes with a reddish tinge. Multiple stems grow from a crown, and roots are formed at stem nodes. The crown has a deep taproot, but other roots are shallower. Leaves are of various sizes, mostly oval shaped, or oval with a pointed tip. Individual flowers are inconspicuous, but clusters are distinctive, formed in in leaf axils, surrounded by stiff, tan-colored bracts resembling chaff on grains. Fruits are small capsules, covered with short, light-brown burrs that attach to animals, and other moving objects.

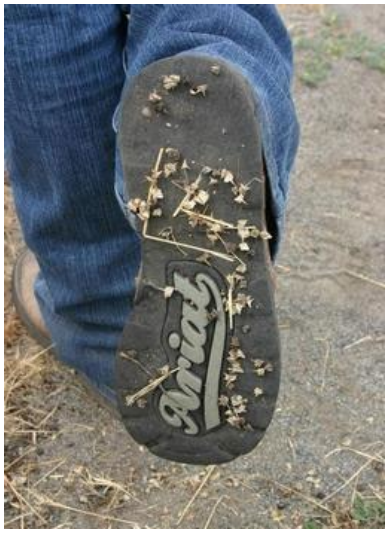
Khakiweed. Photo: Forest and Kim Starr.

Puncturevine (*Tribulus terrestris*), also known as tackweed or goathead, is notorious for its fruit. The fruit are pods which appear as clusters of short, sharp spikes. Each fruit has 5 parts, each containing 3-5 seeds. The fruit parts or 'nutlets' separate easily, and each has 2-4 short, sharp and strong upward-pointing spines on its surface, giving a resemblance to the head of a goat or other horned animal, or a caltrop (a metal device placed on roads or other areas to deter vehicles or pedestrians, that has numerous upward pointing spikes).

Goathead plants and flowers.
Photo: Howard F. Schwartz

These spines attach and often pierce into to passing objects such as vehicle tires, shoes, clothing or fur of animals. They are sharp enough to injure bare skin and that appear as clusters of spines, that can pierce into soles of the feet, and the insides of the mouth and digestive tract of animals if ingested.

The plants can also be mildly toxic to sheep and similar livestock. Fruits tangled in sheep wool cause degradation of wool quality.



Goathead nutlets attached to the bottom of a shoe.
Photo: Eric Coombs

Goathead fruits.
Photo: Forest and Kim Starr.

Goathead-dry separated nutlets.
Photo: Cesar Calderon.

Common summer annual grass weeds include goosegrass (*Eleusine indica*), southwestern cupgrass (*Eriochloa acuminata*), crabgrass (*Digitaria* spp.) and sandbur (*Cenchrus longispinus*).

Goosegrass clump. Photo: Forest and Kim Starr.

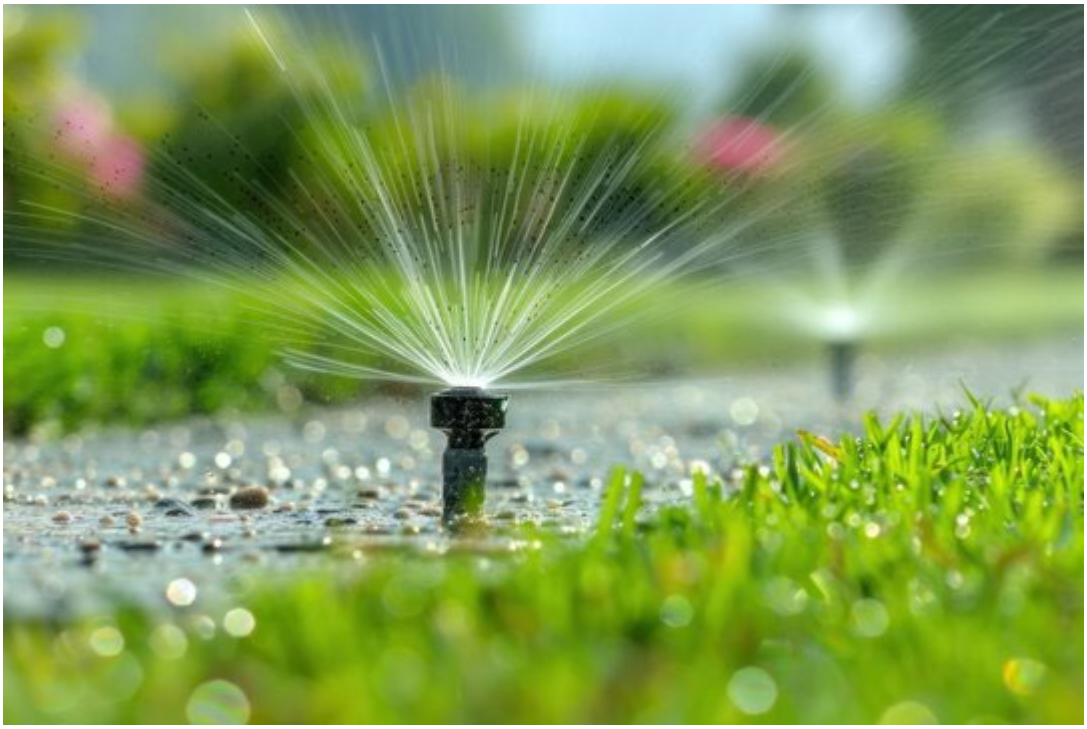
Smooth crabgrass. Photo: Joseph Berger.

Read more about different summer annual and perennial weeds in our publication “Handbook on Pests of Community Environments in the Desert Southwest United States, Chapter 11: Weeds”, linked here: 11 - Weeds (arizona.edu).

Tips for keeping weeds down in the summer

- Many homeowners and landscape managers get a jump start on summer weed control by using **pre-emergents in the spring**. Many summer annuals germinate in the spring, following winter rains, and continue their growth over the summer. Using pre-emergents is a great preventative or proactive weed control strategy. A well-timed application of pre-emergents in early spring can keep your lawns and landscapes weed-free through much of the spring, and even into summer. Later, a second application timed with the monsoon rains can provide control through the fall. Thus, pre-emergent herbicides can greatly reduce the number of herbicide applications in a year.

- Summer is a time when our irrigation systems are working extra hard, but are they all supplying water to the right areas? **Check your irrigation systems** regularly to make sure sprinklers or emitters are pointing the right way, to avoid watering unnecessary areas where weeds will thrive.

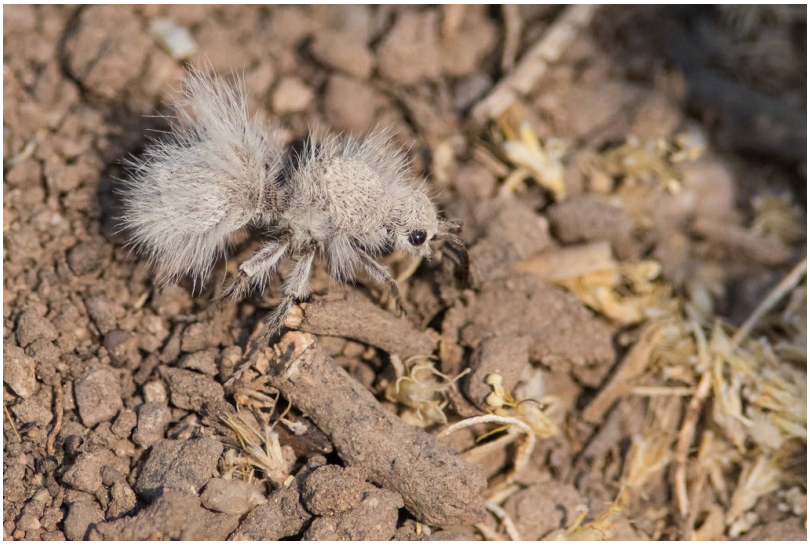


- Optimal irrigation also ensures **healthy turf and landscape plants** that can smother out weeds and reduce weed competition.

- Use mulch to conserve soil moisture and smother weeds.

- Act promptly when you see new clumps of summer weeds emerging, to **prevent them from establishing and going to seed**. Spot treat, or hand-pull individual weeds as much as possible.

What the Heck Was This?



Identify this insect.
Answer: Thistledown velvet ant, *Thasus neocalifornicus*.
Photo: Patrick Randall, Flickr.com.

Congratulations to Master Pest Detective
Patty Kennedy, Glendale Unified High School District

What the Heck is This?

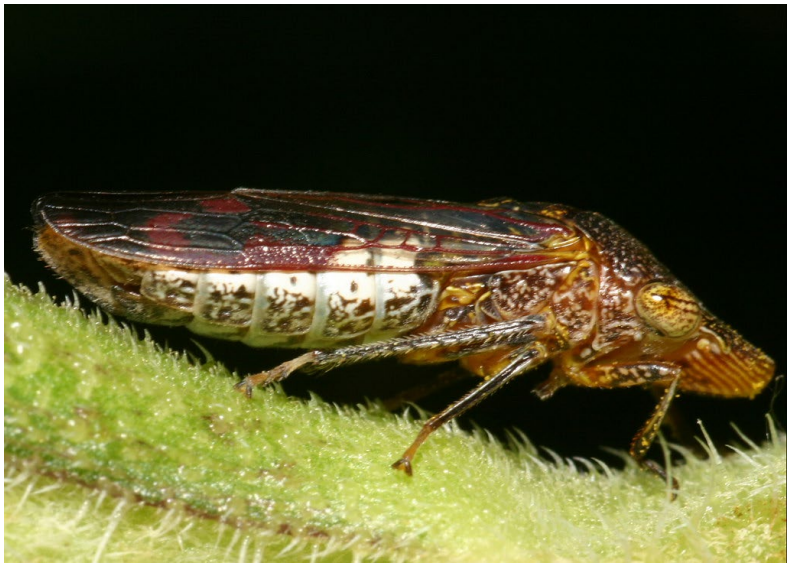


Photo: C. Wulmer.

If you know the answer, email Dawn at dhgouge@arizona.edu. You will not win anything if you are correct, but you will be listed as a **"Master Pest Detective"** in the next newsletter issue.

Please share your thoughts about our newsletter at
https://uarizona.co1.qualtrics.com/jfe/form/SV_cMhZ82JodDKJgCa

Upcoming/Ongoing Events

EPA Webinars about Integrated Pest Management

View recordings of archived EPA Integrated Pest Management Webinars at https://www.epa.gov/managing-pests-schools/upcoming-integrated-pest-management-webinars.

For more information about the EPA Schools program: http://www.epa.gov/schools/

What's Bugging You? First Friday Events *(New York State IPM Program)*

Fridays | 12:00 pm. – 12:30 p.m. EDT | Zoom | Free but registration required.

In this monthly virtual series, we explore timely topics to help you use integrated pest management (IPM) to avoid pest problems and promote a healthy environment where you live, work, learn and play. What is IPM? It's a wholistic approach that uses different tools and practices to not only reduce pest problems, but to also address the reasons why pests are there in the first place. Each month, our speakers will share practical information about how you can use IPM. **Register for upcoming events.**

- August 2: Spotted lanternfly update; Box tree moth update
- September 6: Bed bugs; Head lice
- October 4: Identifying pests in your home
- November 1: 2024 Tick Blitz results; No spray needed
- December 6: Feed the birds; Repurposing a holiday tree

What's Bugging You First Friday events are also available in **Spanish**. Individuals interested in these events can find more information on this website: https://cals.cornell.edu/new-york-state-integrated-pest-management/outreach-education/events/whats-bugging-you-webinars/conozca-su-plaga

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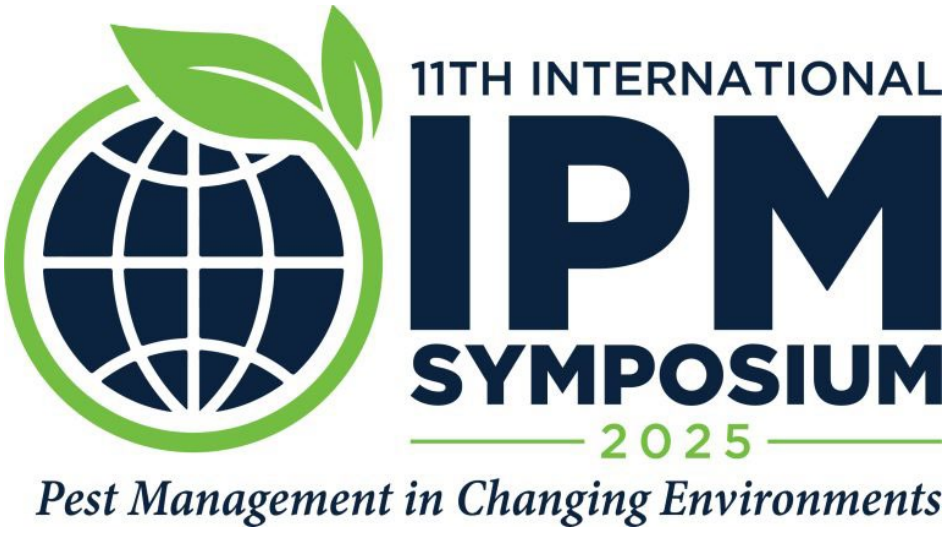
Urban and Community IPM Webinars (Host: University of California)

UC Statewide IPM Program Urban and Community webinar series is held the third Thursday of every month to teach about pest identification, prevention and management around the home and garden. This series is free but advanced registration is required. Dates and topics below, all begin at noon Pacific. https://ucanr.edu/sites/ucipm-community-webinars/



The next International IPM Symposium will be held March 3-6, 2025, at Paradise Point in San Diego.
To make the content more meaningful, prospective attendees are being asked to full out a three-question survey about potential public health, community and structural IPM topics they'd like to hear more about at the symposium.
Take the survey

To view previous University of Arizona newsletters, visit:
https://acis.cals.arizona.edu/community-ipm/home-and-school-ipm-newsletters.

Acknowledgements

This material is in part funded by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number 2021-70006-35385 that provides Extension IPM funding to the University of Arizona. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the U.S. Department of Agriculture or those of other funders.
We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.