

## Extreme weather can kill Arizona's saguaro cactuses and desert plants. Here are tips

By Caralin Nunes, Arizona Republic

Made to withstand the harsh climate of the desert and thrive in it, the dead and decaying desert plants throughout the Sonoran landscape may be perplexing to those who see it.

But even the toughest plants have a breaking point, and after the extreme heat last summer and the heavy rain and snowfall across the desert the past couple of months, many of those plants have reached their limit.

Plants, like humans, can suffer from environmental stressors, leaving them susceptible to infections and decay, according to Kimberlie McCue, chief science officer at the Desert Botanical Garden in Phoenix.

"This summer was, at the very least, a double whammy because it was so exceedingly hot for an extended period of time and we essentially got no rain," McCue said. "When you put these two factors together, what ends up happening is their physiology starts to fail and they become stressed, and their way of survival becomes less efficient."

Cactuses are arguably the most recognized plants in the desert, and here in Arizona, the saguaro tops the charts. Towering 40 to 60 feet tall when fully grown, these icons of the American West collect and store water to use during the heat of the summer. Their skin expands, allowing some of them to hold over 1,000 gallons at a time.

When the hot, dry summer beats down on the landscape, saguaros pull from their water reserve to keep themselves alive and healthy. But there's an obvious issue here: What happens if it doesn't rain and stays hot for a long time — just as it did last year.

"Under extreme temperatures and drought, saguaros can be more susceptible to infections or illnesses, and in some cases, they are not able to recover from regular dehydration that happens during the dry season," McCue said. "And we're seeing the effects of that at unprecedented levels right now."

If last summer was not the hottest ever recorded for Phoenix — though it was for the rest of the globe — why did desert plants suffer more than ever before? Scientists say it is a culmination of issues, including climate change, prolonged heat and little moisture.

A desert icon: Will the iconic saguaro cactus start to disappear from parts of the Southwest?

What happens to desert plants in the summer

Dryland ecosystems "may be more susceptible to climate change than expected," a group of University of California, Irvine, researchers wrote in a recent study based near the Mexican border.

The scientists found a sharp decrease in vegetation cover in the Sonoran Desert, most notably in the drier areas.

Much of the cause could be attributed to rising temperatures and less rain over the course of 34 years, but they also noted that dryland ecosystems are much more sensitive than previously believed.

Heat stress is not confined just to humans and animals; plants experience it too, and last summer was one of the worst on record, according to experts at the University of Arizona's Cooperative Extension.

Higher temperatures result in a depletion of carbohydrate reserves, meaning the plant's photosynthesis system gets damaged. When that happens, cells are injured or can die, and the plant essentially starves to death.

Link to Image

The common signs of drought and heat stress are wilting, drying or browning leaves, sun scorch on branches and trunks, and an overall look of dehydration. In saguaros, dehydration, among other things, will lead to bacterial infections and internal rot.

"You can see rot from the outside, and sometimes — if it's still in the early stages — you can treat it successfully," McCue said. "But most of the time, they're just too far gone, and the plants are doomed. The saguaros will start to drop arms and then collapse because they're rotting from the inside out."

It is the complex interaction between intense heat and lack of water, according to McCue, that reduces the ability of these plants to fend off bad things. When humans are stressed, the immune system can become compromised and more susceptible to infection; the same goes for desert plants.

Cactus repair: On the Bush Fire scar, volunteers have begun restoring the desert, one saguaro at a time

How to care for desert plants in the heat

In times of extended drought and high temperatures, irrigation should be the highest priority to keep them alive. Scientists at the UA Cooperative Extension said the amount of water plants need to survive depends on their size, species and the weather.

Typically, the shorter and wider the tree (such as mesquites, oaks and pines), the more the water needs to be administered around the canopy, as the roots near the trunk do not take up as much water.

Conserving water is also of top importance, so Cooperative Extension experts recommend watering specific plants rather than the entire landscape. If enough rain falls, skipping an irrigation may be the best course of action, according to experts.

General maintenance tips during drought and heat

As the days warm and the hotter parts of the year approach, here are some things experts suggest:

- Avoid or minimize pruning during drought and excessive heat.
- Minimize or skip fertilizing, which increases the salinity in the root zone and can further stress salt-sensitive plants.
- Cactuses and succulents can be covered temporarily with 30% shade cloth to prevent sunburn during excessively high temperatures. Remove cloth once the heat has passed to ensure that plants can resume normal photosynthesis in full sun.
- Smaller plants in pots can be protected from excessive heat by moving them to a shaded area, especially during the hottest part of the day.

To get tips on growing your own garden, landscaping, and more, visit the Desert Botanical Garden's Desert Landscape School Hub for free and paid courses. The garden also offers paid onsite courses. To see what is available, visit [desertlandscapeschool.org](https://desertlandscapeschool.org) and click catalog.

Caralin Nunes writes about weather and related topics for The Arizona Republic and azcentral. Email her with story tips at [caralin.nunes@arizonarepublic.com](mailto:caralin.nunes@arizonarepublic.com).

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