

Beat the heat!

Yuccas, etc.



Agave is a monocot found in arid regions of the Americas, known for its succulent and xerophytic species with large rosettes of strong, fleshy leaves.

Yucca is in the family Asparagaceae, subfamily Agavoideae with rosettes of evergreen, tough, sword-shaped leaves and large terminal panicles of white or whitish flowers.

Aloe vera is a succulent plant species of the genus Aloe.



Xeric adaptations—plants adapt to a dry environment and hot climate in many ways.

- Escape—annuals **begin to grow again (germinate) and bloom in the cool part of the year and re-seed strongly**—an example is the Texas bluebonnet.
- Evade—perennials have bulbs (parts of stems) like rain lilies, or tubers (parts of roots) like potatoes, to **store water** when it's wet and replace the water with the new rains. The underground part stays alive when water is scarce.



Endure--Xeric adaptation

- **Reduce leaf surface**—tiny leaves broken into little leaflets or deeply toothed—an example is the acacia.
- **Dropping leaves** like the mesquite.
- Shading leaves with **hairs** like the Artemisia.





Other adaptations

Rosette spiral structure to direct water to the root, as in agaves, yuccas, and aloes.

Leathery/stiff leaves with a waxy (cuticle) layer as in the live oak.

Delayed growth and bloom as in the penstemmons



Cactus, agave, and yucca plants endure. They have ways to change their structure, and how they function, to minimize heat and water loss.

They make their energy (big word alert—photosynthesis) in their stems.

Compact, round stems reduce the surface. Ribs direct water to the roots.

Waxy, hairy, spiny surfaces trap air, shade the surface, and downward leaves direct water to the roots

Roots near the surface absorb water quickly

They germinate, or make new growth, in cool months.



More adaptations
for heat and dry
weather
(draught).

Succulence means they store water in sticky tissues.

They reduce leaf area with thin small leaves or leaves with irregular edges.

Stomata, or breathing holes are sunken.

They make their energy and give off water at night when it's cool.

Demonstrating
adaptations



Xeric plant shapes





More shapes



The 3 E-s sung to Pop Goes the Weasel

Escape, Evade, Endure, (hands separate, shield eyes, grow upward)

Escape, Evade, Endure, (hands separate, shield eyes, grow upward)

Ribs, rosettes and waxy too (hands together fingers spread)

Help beat the heat for sure! (clapping)



You can be a yucca
artist!

Add a green straw stem and small cotton ball or GTC hole
protector yucca flowers! <https://www.heb.com/product-detail/gtc-reinforcements-white/543090>



Yucca imagineering!

What yuccas and succulents can you find walking in the park?

What can you use to make a yucca snack?
Celery stems? Scallion leaves?

White M&M flowers? Or perhaps agave syrup and gummy butterflies?



Animals also
adapt to heat
and drought.

