

# Succulents Encyclopedia Article

## Succulents

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# Succulents

The term *succulent*, when applied to plants, refers to those organisms that have very fleshy leaves or stems, regardless of whether they are adapted to dry habitats (as are most true succulents). Specifically, succulent plants are those that are strongly adapted to life in water and/or heat-stressed habitats, and are typically represented by members of certain plant families (see accompanying table). Plants that have evolved in very hot, dry conditions, or those that experience these conditions at certain times of the year, have evolved various structures, habits, and metabolic mechanisms to cope with existence in stressed habitats.

## FLOWERING PLANT FAMILIES CONTAINING SUCCULENTS

Family	Common Name	Geographic Distribution*	Number of Species (approximate)	Examples of Succulent Genera
Agavaceae	Agave family	North America, Africa	625	Agave, Dasylirion, Nolina, Sanseiveria, Yucca
Aloaceae	Aloe family	Africa	440	Aloe, Gasteria, Haworthia
Aizoaceae	Ice plant family	Africa	1,300	Carpobrotus, Faucaria, Lithops, Pleiospilos
Asclepiadaceae	Milkweed family	Africa	2,000†	Ceropegia, Huernia, Orbea, Piaranthus, Stapelia
Cactaceae	Cactus family	North and South America	1,600	Carnegiea, Ferocactus, Mammillaria, Opuntia
Crassulaceae	Stonecrop family	Africa, Asia, Europe	1,500	Crassula, Echevaria, Kalanchoe, Sedum
Didiereaceae	Didieria family	Madagascar, Africa	11	Allauadia, Decarya, Didieria
Euphorbiaceae	Euphorbia	Africa, North	5,000†	Euphorbia,



e	family	America	Jatropha, Monadenium
Portulacacea e	Purslane family	Africa, Australia, North and South America	250 Anacampsero s, Ceraria, Portulaca

\* For succulent members of the family.

† Approximately 450 species are succulent.

† Approximately 750 species are succulent.

Most succulents are xerophytes, that is, plants that have developed adaptive features for life in dry, often hot, environments. In addition to some shared features with nonsucculent xerophytes, succulent plants have acquired additional specialized features, independently, in several different plant families. The general characteristic of plants that have evolved succulence is the presence of large **parenchyma** cells in leaves or stems (and occasionally in roots) that serve the purpose of water storage. Furthermore, these plants may also possess one or more of the following adaptations to reduce water loss during periods of heat or drought stress: the presence of epidermal cells with thickened outer walls; increased accumulation of the waxy **cuticle** layer covering the epidermis; and the evolution of **crassulacean acid metabolism** (abbreviated CAM; this process delays gaseous exchange through **stomata** until nighttime, when temperatures are lower and water lost by **transpiration** is decreased).

### See Also

Cacti; Deserts; Defenses, Physical; Photosynthesis, Carbon Fixation And.

### Bibliography

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