

ALL ABOUT SUCCULENTS

By *Rosario Douglas*

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The exceptions to the rule

Most members of the Cactaceae family are succulents, meaning they store water in order to survive dry periods. Thus it is commonly said that **all cactus are succulents but not all succulents are cacti**. It turns out that this statement is only partially true since cacti in the genera *Pereskiaopsis*, *Pereskia*, *Leuenbergeria* and *Rhodocactus* are exceptions to this rule.

The four genera mentioned above are cacti but they are not succulents because they do not really store much water compared with most succulents. Plants in these genera are considered “archaic” or primitive cacti, they are the best living examples of ancestral cacti (Edwards and Donoghue, 2006).

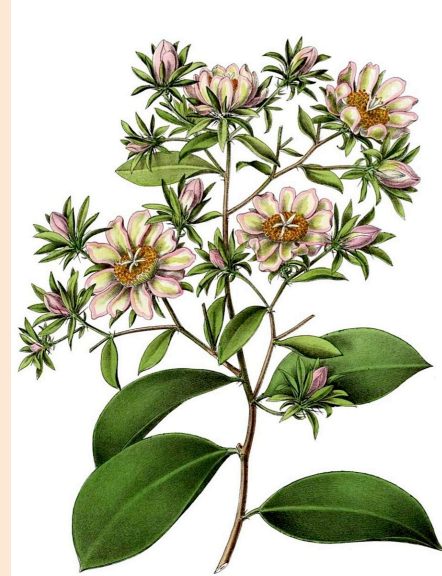
Most cacti are leafless and photosynthesis takes place via the stem. The elimination of leaves in most cacti is one of the main adaptations to drought. This is not the case with *Pereskia* and closely related genera since they have persistent leaves, as well as thin spiny stems. In times of drought *Pereskia* can drop their leaves (deciduous).

Pereskia and related genera are found in the tropical Americas south to northern Argentina. These cacti are trees, bushes or climbing shrubs. In cultivation they are useful for grafting since they do well in nutrient rich soils, although they cannot tolerate moisture over long periods and need to be watered in moderation at regular intervals (Cullman et.al.1986).

Illustration (top right): *Pereskia aculeata*

Blühende Kakteen - Iconographia Cactacearum Tafel 86 (cropped)

By Schumann, Gürke & Vaupel. Filtered image Peter A. Mansfeld 1902 From Wikimedia Commons



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The exceptions to the rule cont.

The following is a brief description of each genus.

Pereskiaopsis The name means *Pereskia*-like. These cactus have flat leaves and they also have glochids. They can also be trees, bushes or climbing cacti. Flowers come out laterally. There are 12 species native to Mexico and Guatemala (Cullman et. al. 1986).

Pereskia Formerly many more species which have now been placed in two other genera (*Rhodocactus* and *Leunbergeria*). *Pereskia* are trees, bushes or climbing cacti with flat ribbed leaves.



A. *Pereskiaopsis chapistle*
Today this plant is known as *Pereskiaopsis rotundifolia*. Illustration by Mary Emily Eaton (1873-1961). From *The Cactaceae* (1919-1923) by Britton et Rose, Vol. I, Plate III. Vol. Creative Commons

B. *Pereskia* sp. Leafless plant in the dry season. From a slide taken by Michael Douglas in Oaxaca, Mexico. 1990's

C. *Pereskia* sp. With leaves in the wet season. From a slide taken by Michael Douglas in Oaxaca, Mexico. 1990's

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Pereskia cont. The showy flowers are placed on a stalk and the roots are often fleshy and tuberous.

Cactus in this genus delay bark formation and have stomata which means that the stem plays an important role in the photosynthesis process.

Pereskia have spines and some are rather large. In many countries they are used as hedges and the long spines of some species have been used as needles (Wikipedia).



D. Pereskia lychnidiflora,
Revue de la famille des
cactées Paris by Augustin
Pyramus de Candolle 1829, pl.
18 Wikimedia Commons

E. Pereskia sp. Trunk of
leafless plant in the dry
season. From a slide taken by
Michael Douglas in Oaxaca,
Mexico. 1990's

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Pereskia cont.

More examples of cactus in the genus *Pereskia*



F. *Pereskia aculeata* in habitat
Pereskia aculeata Mill. -
CACTACEAE - BR 242 -
Cristópolis - Bahia - Brasi
By Joao Medeiros 2011
Wikimedia Commons



G. Developing fruit of
Pereskia aculeata at
Ilanda Wilds. By Purves M
2010. Wikimedia
Commons

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Leuenbergeria In 2013 it was suggested that 8 species formerly placed in the *Pereskia* genus be moved to the genus *Leuenbergeria*. These species are found along the Pacific coast of southern Mexico, around the southern Gulf of Mexico and the Caribbean Sea. Species in this genus start forming bark early and lack stomata on their stems. (after Wikipedia)

Rhodocactus As recently as 2016 five *Pereskia* species (*Pereskia bahiensis*, *Pereskia grandifolius*, *Pereskia nemorosus*, *Pereskia sacharosa* and *Pereskia stenanthus*) from southern South America were placed in the genus *Rhodocactus* (Asai & Miyata, 2016).

In summary there are a few dozen or so species of cacti that are not succulent. Thus, it is best to say almost all cacti are succulent except for *Pereskia* and affiliated genera.

Sources:

Asai, I. & Miyata, K. 2016. An enumeration of *Rhodocactus*, a genus segregated from *Pereskia*. *The Journal of Japanese Botany* 91: 7-12.

Cullman et.al. *The Encyclopedia of Cacti*, Timber Press 1986

Erika J. Edwards and Michael J. Donoghue, 2006. *Pereskia* and the Origin of the Cactus Life-Form. *The American Naturalist* Vol. 167, No. 6.

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Encyclopedia Britannica <https://www.britannica.com/plant/Pereskia>

Wikipedia <https://en.wikipedia.org/wiki/Pereskia>

