

# Euphorbia

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The family Euphorbiaceae is the fourth largest of all the families of flowering plant with more than 3,000 genera. Although the family has almost worldwide distribution, the majority of the plants are found chiefly in tropical and subtropical Africa and South America. The milky sap is often poisonous, and some of the plants, notably castor bean, are used medicinally as purgatives. The most valuable of the rubber plants of the world, *Hevea brasiliensis*, belongs to this family, and other genera contain species that are sources of rubber. Cassava, a staple food of tropical countries, and tapioca are obtained from the roots of species of manihot. Tung oil is extracted from the seeds of species of aleurites, a mainly Asiatic genus. Castor oil, chemically altered into a drying oil, is used in paints. The succulent genera of most interest to us are: euphorbia, jatropha, monadenium, synadenium, and pedilanthus. Jacobsen includes two other genera, stenadenium and elaeophorbia, but the few species included in these are unlikely to be encountered.

The genus euphorbia contains about 2,000 species, including the popular holiday plant poinsettia, and the persistent garden spurges we have all known to hate. Many of the shrubby types have been cultivated in temperate climates, but it is in the warmer parts of the world where the genus shows its real diversity and adaptive ability. Succulent euphorbia species number over 400, and their forms range from the sub-blobose *E. obesa* to geophytic caudiciforms such as *E. tortirama* to larger spiny shrubs and even huge trees up to 30 feet tall. Many species have fluted stems armed with spines and closely resemble cacti. This is an excellent example of parallel evolution, where different plant families growing in different geographical locations, but under similar climatic conditions, develop similar strategies for survival. Even so, a spiny euphorbia can always be distinguished from a cactus, because it won't possess an areole, the felt-like pad from which the spines arise, unique to the Cactaceae.

The name euphorbia is derived from Euphorbus, the physician to Juba, King of Mauritania, a province of Carthage and then Rome, roughly situated in present-day Morocco. According to the historian Pliny, Euphorbus discovered curative effects from a resin secreted probably by the plant now known as *Euphorbia resinifera*. Juba II was brought to Rome as a child from Numidia, where his father was king, in 46 BC. He later married the daughter of Antony and Cleopatra. He was placed on the throne of Numidia, but was given the throne of Mauritania in 25 BC. Pliny writes that legend says that Juba was amazed at the succulence of this plant, and he dedicated it to his physician because euphorbus in Greek means well-fed, and the king thought it funny, as both his physician and the plant were of such fleshy build.

Euphorbias contain, along with other genera in the family, a milky sap, which oozes out from wounds, sometimes from even the slightest touch. This dries into a latex-like substance, sealing the wound, and, no doubt, is a deterrent to insects and herbivores.

Depending on the time of year, vascular pressure inside the plant can cause the sap to spurt out when cut. Contact with the eyes, nose, mouth and even skin can produce severe pain and inflammation. Some species cause little or no irritation to the skin, while others initiate a more serious reaction. While visiting the euphorbia reference collection in Bolinas, California, I was affected by what I believe to be *Euphorbia virosa* by simply standing near some plants in an enclosed portion of the greenhouse. This is not to say that euphorbias are to be avoided, but extra precaution is needed when handling them.

A very specialized type of flower structure called the cyathium also characterizes the genus euphorbia. The individual flowers are unisexual and reduced down to the essential parts: a single female floret, comprising a stalked ovary, surrounded by a number of male florets each reduced to a single forked stamen. The corolla and calyx (petals and sepals) in a normal flower place are taken by an involucre of bracts, and include the nectar glands. The bracts may be small and green or yellow or, they may be highly ornate and brightly colored. The three-lobed ovary swells up after fertilization producing just three large seeds that are ejected when the capsule dries and suddenly explodes. Some species have both male and female flowers in the cyathia and, therefore, are bisexual. Other species have separate male and female cyathia on the same plant and are called monoecious, while still others have plants with only male or female cyathia and are called dioecious.

I have been growing euphorbias and members of the other genera for over 20 years. While some are a little tricky to cultivate and need special conditions to do well, I have found that most present no particular problems. Most grow during the warmer months of the year and take a general cactus/succulent mix. They can be watered and fertilized on a regular schedule along with the cacti, tapering off during the colder winter months. Most, however, are frost-tender, and will suffer damage during a freeze if not protected. Some, especially the ones from Madagascar, don't even like the temperature to go below 40 F, and must be brought inside or heated outside in winter. To learn more about euphorbias, consult the *Euphorbia Journal* and see how amazing and diverse these plants are or, take a trip to Arid Lands Greenhouses in Tucson and see close to 300 species in person.

#### References:

Kearney, Thomas H. & Peebles, Robert H. (1969). *Arizona Flora*. California: University of California Press.

Martin, Margaret J. & Chapman, Peter R. (1978). *Succulents and Their Cultivation*. New York: Charles Scribner's Sons.

Rowley, Gordon D. (1987). *Caudiciform and Pachycaul Succulents*. California: Strawberry Press.