American agave
Family: Agavaceae

Agave A. is a perennial, evergreen cacti in the agave family; it is related to the Agave tequiliana, which is used to produce the popular alcoholic drink, but has wider and more green-colored lateral penca, or leaves, than A. tequiliana. The American Agave has both male and female organs, classifying it as a monoecious species. The plant has a diverse set of uses from syrup production, to rope making, to alternative medicinal use, to culinary use where the heart is baked and served as a sweet source of carbohydrates and other nutrients.

Historically, A. Americana has been used within traditional medicine as an anti-inflammatory and has recently been shown to be more effective and have fewer side effects than comparable commercial drugs used for the same purpose. The sap can be used as a poultice on wounds as an antiseptic, on bruises for faster healing, or it can be taken orally as a treatment for diarrhea, dysentery, and other internal issues. Tonics made from the extracts have been known to be an effective treatment for falling hair when applied topically, and the gum from the root of the cacti can be used as a treatment for toothaches and even syphilis. On top of the plethora of traditional medicinal uses, A. Americana has been discovered to be a great potential bioenergy crop, meaning that it would be an effective feed source for livestock whose waste would be used for bio ethanol energy production within arid land regions. A. Americana leaves have been found to be a great source for production of steroid drug precursors, making the plant incredibly diverse in application.

Mexican Fencepost Cactus
Family: Cactaceae

The Mexican fencepost cactus is a tall columnar cactus native to the states of Hidalgo, Queretaro, and Guanajuato of Mexico and is widely used, as the name suggests, as a natural barrier or “living fence”. Each column has about five to seven protruding ribs from the center, and produces pink to red flowers, about 1.5 inches long, which develop into yellow-to-red colored fruit at the end of the spring blooming season. The columns can grow up to 20 feet tall at maturity, and can be vegetatively propagated by slicing a section of the column off and submerging the cut section in soil. Pachycerus m. has been used within traditional medicine by the people of Zapotitlan for gastrointestinal issues where it is boiled, and then ingested orally. It is also known to have been used as a diabetes treatment within traditional medicine. Additionally, within Western modern medicine, Pachycerus m. has been researched for its promising possible use for treatment of gastrointestinal cancers. Within the study conducted on tumor-bearing mice, the extracts from the cacti produced up to 89% in vitro cytotoxicity to LS178Y-R, cancer-causing cells, supporting the future evaluation of the extracts as bioactive compounds within clinical-level studies.
The mountain cottonwood (right) is a fast-growing, hardwood, white poplar with broad leaves and moderate water use. It is known to grow within riparian habitats with frost and heat tolerant characteristics when adequate water is supplied. This tree is a deciduous, dioecious tree, meaning that each individual specimen has either male or female parts, and the leaves are shed after every growing season. Mountain cottonwood earns its name from the characteristic cotton-like fiber that is produced and then dropped after maturity for about two weeks a year. The fibers can blow up to five miles after they are shed, making this adaptation a great way for the female trees to disperse their seeds and further the spread of their future offspring.

Ocotillo

*Foquieria Splendens*
Family: Fouquieriaceae

(left) Ocotillo, meaning “little torch”, and stemming from the the Nahuatl word “ocotl”, is a unique seed-bearing semi-succulent shrub, with long spines along each of the “branches”. *F. Splendens* has small, oval-shaped leaves that appear within as short as 24-48 hours after a rainstorm, along with beautiful, fiery red-to-orange sprays of flowers at the end of each branch between February and June, depending on precipitation. After the blooming season, fruit can be found at the ends of some branches, and is known as “candy” by the Papgo and Yavapai tribes, which are natives to the ocotillo’s natural environment.

Within traditional Native medicine, it is known as a “blood medicine”; it is believed to have healing and regulatory properties by the Mahuna tribe, and the Apache use a powdered form of the roots to treat wounds and swollen areas or add it to a bath to help with fatigue.

Recently, within Western herbal medicine, ocotillo has been used to restore balance within hormone fluctuation in women. It is a known stimulant, cholagogue, decongestant, expectorant, and a mild emmenagogue, making it a versatile medicine with many uses, and even applications outside of medicine.

Ocotillo morphology makes this plant able to quickly soak up any precipitation with a wide-stretching root base, and the presence of chloroplasts along the stems allow the plant to photosynthesize even during drier months when the leaves are not present. Within the North American Southwest, it can be commonly seen as a landscape feature in residential and commercial desert gardens, adding to the unique look of a changing desert garden.