

An Evergreen Shrub that Speaks to You!

I often look at a plant and contemplate what the plant is attempting to tell me. Yes, I realize plants may not be able to speak, but many are able to convey when they are getting dry, receiving too much or too little sun or are simply cold. January is one month when plants can palpably tell you they are cold. Whether it is the leaves of Rhododendron curling and drooping downward or the stems of Prickly Pear wrinkling and compressing against the ground, plants are talking! Many gardeners may not be acquainted with Prickly Pear, botanically known as *Opuntia*, but it is one of our more interesting evergreen shrubs and the species *Opuntia humifusa* is a native of New Jersey.

Opuntia humifusa is a member of the Cactus Family or Cactaceae and it is amazingly hardy for a cactus! Of the 150+ species, it has the largest native range, stretching from Montana to New Mexico, east to Florida and Ontario! Interestingly, with the exception of the genus *Rhipsalis*, all 1,700+ members of this family are native to North or South America. As an aside, it is thought that *Rhipsalis* arrived in Africa from a bird traveling from South America! The genus name was officially penned in 1754 by the English botanist Philip Miller (1691-1771) after the Ancient Greek harbor city of Opus. He was influenced by the Greek Philosopher Theophrastus (371-287 BC) who noted how a plant grew near Opus that could easily be rooted from its leaves, a trait shared by *Opuntia* stems. This species was described in 1830 by Constantine Samuel Rafinesque (1783-1840), a self-taught botanist and zoologist who settled in Ohio from France and described a number plants Native to North America. The species epithet comes from the Latin *Humus* for soil or topsoil and *Fusus* for spreading out or flowing, describing how the plant spreads on top of the soil to create substantial colonies over time.

Typical of the Cactus Family, *Opuntia* does not have any leaves. What resemble paddle-shaped leaves are actually broad stem segments called cladodes. *Opuntia* is considered by many to be a perennial, due to the resemblance of the stems to leaves, but it is actually an evergreen shrub! These stems range in size from 2-7" long and up to 5" wide by 1" thick. They become



constricted at the base where it is attached to another stem segment. The stems are green to dark green in color due to the presence of chloroplasts, allowing them to assume the photosynthetic function of leaves. The leaves are reduced to clusters of small, hair-like bristles upwards of 3mm long called Glochids or Glochidia. Oddly, *Opuntia* is the only member of the cactus family to have developed these minute accessories. The glochids arise from small mounds

or bumps on the stem called areoles that appear in diagonal rows on the stems, as seen in the image above. Areoles are specialized axillary buds or short branches that are typical to all members of the Cactus Family. If the cladodes were inflated into the typical round stem, the

diagonal rows of areoles would appear as a whorled orientation of branches! The areoles on some *Opuntia* species produce an overabundance of true thorns and while this is typically not true of *Opuntia humifusa*, there are seedling variations and some plants have more thorns than others. However, all plants of this species have glochids and with upwards of several hundred per areole they provide multiple benefits for the plant. Much like the hairs on your arm, they help to retain air next to the stem, which aids in insulating the stem from the chill of winter and heat of summer. They also provide some shading of the leaf in summer and the increased surface area helps to capture moisture from fogs or heavy dews, forming droplets that run down the stem to the roots. However, without dispute, their main mission is in defending the plant. The apical tips of the glochids contain numerous microscopic barbs. When touched, the barbs readily penetrate and become lodged in the skin, although they may not be noticed initially. The glochids of *Opuntia* 'Santa Rita' (pictured above) are longer and easier to see than those of *Opuntia humifusa*. The base of a glochid is designed to readily detach from the areole, allowing one accidental touch of a stem to result in a cluster of 20-30 spines in your skin. Ouch! I have found Duct Tape handy in removing the tiny irritants, although in some instances a rash results that can last for months.



At this point, a gardener might be wondering why a plant that bites could be desirable in the garden. Oddly, I find its defensive mechanism rather interesting and I enjoy sharing its story with fellow gardeners. Other garden worthy attributes include the attractive coarse texture provided by the stems that looks great paired with finer textured plants such as *Sedum sexangulare* as seen below. Its evergreen stems also look very attractive in the winter garden. Granted, on extremely cold days, the stems or cladodes appear shriveled and collapse to the ground, but just like the Rhododendrons, the plant is merely telling you that it is cold without the need of a thermometer! The cladodes lay close to the ground during subfreezing temperatures to make good use of the heat stored in the ground. Interestingly, it is a combination of accumulated sugars and a sugary alcohol named mannitol that acts as 'antifreeze' and prevents the fleshy stems from freezing at -20°F or lower!

Once the temperatures warm with the approach of June, the plant offers further interest as the bright yellow flowers begin to appear along the upper edges of the



cladodes (pictured above right). The flowers are 2-3" in diameter and reminiscent of a Daylily, last for merely one day. Fortunately, there is an ample number of buds, ensuring several weeks of interest. The 'petals' are actually called tepals, as they consist of a combination of 7 modified leaves or sepals and 7+ petals that appear identical. Within the flower, over 200 pollen releasing anthers provide wonderful ornament as they spiral around the lobed female stigma. The stigma is thought to have the enlarged lobes in order to provide a landing 'pad' for the pollinators. The flowers are visited mostly by bees, ants, beetles and wasps, although not all are effective pollinators. Some are opportunists and wish to dine on the protein rich pollen without helping in the process of pollination. To defend against these 'pollen robbers' the anthers or pollen bearing organs are capable of a Jeopardy worthy process termed thigmotactic movement, during which the taller stigmas quickly curl inward when they are brushed by an insect. The lower stigmas bear nearly 80% of the pollen and the action of the taller members curling downward is thought to protect the lower level from pollen theft. The true pollinators understand how to squeeze between the inward curved anthers and the central stigma, effectively depositing pollen from another flower on the stigma in the process. Amazing!



When pollinated, the flower is followed by the development of a 1½-2" long fruit, which gradually turns from green to an ornamental red come September as it ripens (as seen at left). Fruits are nutritious, although somewhat bitter to the taste. Care must be taken when harvesting the fruit as small clusters of glochids are present on the skin of the fruits and require removal. Fruits remain on the stems through the winter and can be harvested at any point until spring.

The fruit is typically eaten by quail, turkeys and woodpeckers, although turtles, squirrels and even deer will occasionally dine on the fruits. Interestingly, the flesh of the stems can also be eaten once the glochids are removed; it has a consistency similar to okra and a taste like green beans. The best tasting fruits come from the widely cultivated species of *Opuntia ficus-indica*, which is believed to have originated in Mexico and is only hardy to 20°F. *Opuntia* fruit is often called 'Tuna', a term believed to have its origins in the now extinct Taíno culture, who inhabited the Caribbean prior to European settlement.



Typical to plants in the Cactaceae, Prickly Pear requires full sun and soils

that are gritty and well-drained in nature, as seen above at right. A mulch of fine gravel, such as chicken grit is ideal for keeping the base of the plants dry and free from decay or rot. Plants will produce one to two new cladodes each year from the upper edges of the previous year's growth, ultimately reaching between 12 to 18" tall and spreading to 3' in diameter or larger. Weeding around the stems can be a bit challenging, but a trick I learned from a fellow gardener was to use a long hemostat to grab and extract the weeds. Fortunately, the hot and dry locations required by the plants are not terribly conducive for weed growth. Plants can be easily propagated when temperatures are 60° or warmer. Simply break off a cladode at a joint, allowing it to cure or callous by placing it in a sunny, dry location for 7-10 days and then stick it into well-drained soil! Plants will naturally propagate by similar asexual methods in the wild when the cladodes are detached by animals.

Certainly not a 'shrub' many gardeners might have initially considered, *Opuntia humifusa* has much to offer for the garden and looks great combined with other drought tolerant sedums and/or *Euphorbia myrsinites*, the Donkey Tailed Spurge. It even looks great in winter containers as seen below. The plants also provide an interesting pollination strategy that will appeal to children if the anthers are disturbed with a pencil to initiate anther movement while the thick green stems provide a much slower seasonal movement in response to temperatures. In fact, this North American native might just speak to you and provide the perfect accent for year-round interest in your garden!



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