

## General Information

Bromeliads are a unique and fascinating family of hundreds of extremely diversified and exotic plants, which are amazingly adaptable, tough and relatively easy to grow. People often say that Bromeliads thrive on neglect. The species can tolerate a huge variety of growing conditions including heat, light, air and moisture.

No Bromeliads are native to Australia and therefore have all been imported and introduced here. The plants are native to the Southern States of the USA, Central America and deep into South America, with regions like Florida, Mexico, the West Indies, parts of Brazil and as far south as Chile having many and various species. One very primitive species is also found in Africa and has survived since the two continents separated.

## Bromeliaceae Family

The entire bromeliad family called Bromeliaceae, is divided into three subfamilies containing many genera, with the Bromelioideae and Tillandsioideae subfamilies being the most popular bromeliads for enthusiasts and collectors.

The subfamily Bromelioideae is distributed from Mexico to Argentina and has the greatest number of genera. They are mostly epiphytic, tank-type plants with spiny leaves and berry-like fruit containing wet seeds.

The subfamily Pitcairnioideae are the most primitive bromeliads, descended from the grass family. Nearly all are terrestrial. Most have spiny leaves. The seeds are dry and usually winged.

The subfamily Tillandsioideae has few genera, but includes about half of the species of bromeliads. Growing throughout the Americas, they are mostly epiphytes. All have spineless leaves. Seeds are dry, with feathery "parachutes" and are blown and float in the wind.

The most notable and commercially developed of the family is the edible pineapple (*Ananus comosus*). Some other well know members include the old man's beard or Spanish Moss (*Tillandsia usneoides*), Queens Tears (*Billbergia nutans*), the match stick plant (*Aechmea gamosepala*), the colourful *Billbergia pyramidalis* variety *concolor* and silver grey *Aechmea fasciata*, with the large pink bract and purple flowers, just to name a few popularized plants.

Some Bromeliads grow naturally on the branches of trees (epiphytes), some cling to rocks (saxicolous) and others grow on the forest or desert floors (terrestrial). Some species inhabit humid swampy jungles, wet high level forests on mountains, low coastal slopes and even dry deserts.

The plants have an extremely diversified range of colours, shapes and patterns and this is complemented by a similar complexity in their bracts and flowers. The scales, which cover the leaves on bromeliads, are wonderful moisture absorbing organs which often form attractive bands, stripes, spots and patterns.

The different plant species are extremely variable in their sizes, ranging from miniatures at 25mm in size, to giants at 10.5 meters and all the varying sizes in between.

Most Bromeliads have strong survival characteristics and reproduce by developing offsets, pups or shoots, but can also flower to produce seeds. Generally speaking the seedlings are very sensitive and relatively slow growing, with some taking twelve months to grow 20mm and five years before flowering.

Their adaptability and resilience is shown in their ability to have their own water reservoirs (dam) within the leaves and grow different type root systems either capable of only holding-on or adsorbing nutrients from the soil.

The more favourable the conditions provided and the closer these conditions are to the natural habitat, the better the cultivation results will be.

## **Local Queensland Information**

In Queensland's subtropic environment near the coast, most bromeliads are easily grown outdoors all the round in dappled light or 60% shaded conditions, similar to natural state, in or under trees. Further inland the climate is often much harsher, with some plants requiring additional protection as very high temperatures can occur in summer and frosts in winter. Both these conditions will burn the tender foliage severely.

Specific knowledge of the plant's natural habitat will assist in simulating and locating the plant for the best growing conditions.

Because of our isolation and import restrictions in Australia from the plants natural home, we have developed and propagated a very diversified and unique range of cultivars to the rest of the world. After flowering, the plants are placed in the garden and grown on, often producing many pups and forming large clumps and sprawling colonies, as in the wild.

Unfortunately, we do not have the same natural specialized pollinators, but various local pollinators often substitute doing the job for nature. These include insects, like bees, ants, flies and moths.

With the bromeliads ability to store water and our relatively dry climate, the local wildlife flourishes and congregates very happily including frogs, snakes, lizards and birds. These creatures are all attracted to these strange but welcome immigrants.

## **Light**

The light conditions for growing different bromeliads range from full sun to dense shade, but is an extremely important factor in growing healthy and colourful bromeliads. The best colour is obtained when the plants are exposed to good light for as many hours a day as possible. Some can be grown in full sunlight (e.g. Dyckia, Hechtias, some Aechmeas) but most will suffer bleaching and burning of the leaves in continuous direct sunshine, especially through summer. In the garden bromeliads will grow happily in or under trees or in shade houses with 60% shade. Also at home most bromeliads do well, on patios or verandahs, near windows, glass doors or other well lit and ventilated locations. Plants growing in insufficient light will usually have long, straggly and dark green leaves, as they try to compensated for the additional light requirements.

## Temperature

In our coastal region of Australia the pleasant temperatures range from 6°C to 34°C, but further inland frosts occur in winter and temperatures can exceed 40°C in summer. Most bromeliads will naturally tolerate temperatures from 10°C to 30°C, but some will require protection and others will not grow as efficiently as they can elsewhere. Many will need to be protected where frosts are experienced (e.g. *Cryptanthus* and some green leafed *Tillandsias*).

## Water

As in nature, a thorough drenching and flushing is recommended every few weeks for most bromeliads. Most cultivation problems arise by over watering, thus causing rotting of roots and crown from fungal disease.

Watering is best provided in early to mid-mornings, especially in the colder months. Two or three waterings per week in the warm to hot months is recommended, with less in the cooler weather, about once a week. In hot, dry conditions daily watering would be desirable to help maintain a reasonable level of humidity. When the summer temperatures remain very high at night, it is beneficial to use the watering as a cooling effect to allow the plants to cycle and exhale oxygen at night.

## Fertiliser

In their natural habitat this family of plants depends upon minute nutrients from the air circulating and those with cups, draw their nutrients from leaves, excrement, dust, reptiles and insects, which fall into the water reservoirs. Terrestrials and pot grown epiphytes draw nutrients from their roots as well. Bromeliads can be grown successfully without the use of additional fertilizer; however their judicious use can be beneficial.

Weak foliant and liquid fertilizers are often used because of the plants natural ability to easily absorb through the leaves. Strong fertilizers or insecticides will damage the plant. Excessive use of nitrogen in fertilizers will promote excessive leaf growth and reduce colour in *Neoregelia* and some other species.

## Potting and Mounting

Potting and mounting of bromeliads in Queensland is more for their easy relocation, than for better growing advantages and results, in most cases.

For the many epiphytic species, which can grow just as well as terrestrially, it is most important to use an open potting material which is porous and slightly acid, able to retain some moisture without staying soggy. Combinations of materials such as fine pine bark, peat moss, peanut shells, rice hulls, charcoal, plastic foam granules, coarse sand and perlite can provide these requirements.

Terrestrial bromeliads (e.g. *Dyckia*, *Cryptanthus*) will need some compost or leaf mould, with some plants developing relatively large root systems, if the space is available.

As they do in the wild, there are many epiphytic species (air plants), which thrive when mounted on cork, branches or roots of dead trees, or in the forks or branches of growing trees (eg *Neoregelia compacta*, *Aechmea nudicaulis*, *Aechmea orlandiana* etc and of course most of the *Tillandsias*). A great variety of *Tillandsias* are available and grow into fascinating specimens after being mounted by cold glueing or tying with strips of stocking material.

## Propagation

Most Bromeliads have strong survival characteristics and they reproduce naturally by flowering to produce seeds and also can develop offshoots.

Seeds can be germinated and grown on, but can take a long time to reach maturity. Unfortunately in Queensland, we do not have the same natural specialized pollinators that occur in the Americas, but various local substitute pollinators have taken over this role and performing this job for nature. Alternatively the flower pollination is left to gardeners to produce and disperse the seeds locally.

However most plants produce some offshoots or "pups" and these can be removed and grown on fairly easily. These pups can be removed when they are about one third the size of the "mother" or parent plant and then pot or mount as required.

Some plants only produce a single offshoot from the top of the parent's centre, which is basically only a replacement system and not multiplying the species.

Recently, some species have been reproduced from tissue culture with varying degrees of success.