Propagation of the Genus *Eremophila*©

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The genus *Eremophila* is an endemic plant found in Australia. The genus consists of approximately 180 species, many of which are outstanding ornamental candidates for the garden. They grow as undershrubs in low woodland settings or in open sunny areas. Eremophilas are a member of the Myoporaceae family.

The name *Eremophila* comes from the Greek word *eremos*, which means desert or lonely places, and *phileo*, to love. These plants are truly desert loving as they are mainly located in the dryer areas of Western Australia. The common name for the genus is Emu-bush or poverty bush. The name emu-bush comes from the fact that emus eat the fruit off some of the eremophilas. Poverty bush refers to the harsh environmental conditions that the *Eremophila* thrives in.

Eremophilas come in a range of sizes. They can be prostrate, rounded, upright, tall, or almost tree-like in their form. The branches can be glabrous, hairy, or scaly. Their leaves can be alternate, opposite, or (rarely) whorled.

The flowers of the *Eremophila* genus are tubular. They are usually 2-lipped with the upper lip having 2 to 4 lobes and the lower lip having 1 to 3 lobes. The flowers come in various colors — the most common are in the red, lavender, yellow, and pink ranges. Some have spotted tubes on the exterior and others have spotted interiors. The interiors usually have small hairs as well. Some flowers are very large and showy for long periods of time and others have many small flowers produced in profusion along the branches. The calyx has 4 lobes, exserted or not exserted. In some species attractive calyx lobes become enlarged after the flower dies, (e.g., *E. abietina, E. cuneifolia, E. fraseri, E. latrobei,* and *E. oppositifolia*). The fruit is a nonsplitting drupe-like structure that can be glabrous, hairy, or scaly, smooth, ribbed, or (rarely) winged. Many of the *Eremophila* species attract nectar-feeding birds.

The eremophilas grow in deep sands, rocky and gravelly loams, and clay loams. Good drainage is their main requirement. The pH of those soils is usually neutral or alkaline. The majority grow in areas with a fairly harsh climate. The daytime temperatures are usually very high in the summer with little to no rainfall. The winter temperatures are cold enough to allow frost and sometimes even limited rainfall. In some arid areas, they have been known to survive for 1-2 years without supplemental water. When establishing, they require water, but once established, they will grow well with very little extra water. They do respond however, to a good periodic soaking. They do well in the sun and not so well in long periods of overcast and humid weather.

They have adapted their foliage to compensate for the lack of water and the harsh climates in which they grow. Some have developed a lacquer-like appearance to their foliage. This is caused by an exudate that protects the leaves from the drying winds. Others have developed a dense covering of silver hairs that act as a reflectant to the suns rays and help reduce water loss.

The propagation of eremophilas is mainly by cuttings. Some species are easy, while some species can be extremely difficult. The time of year and the condition of the plant play a major role in the willingness of the cutting to root. Late spring, in

California, tends to be a good time to gather material to propagate.

Root suckers of *E. longifolia* and *E. bignoniiflora* tend to root readily. Half-ripened tip cuttings of *E.maculata, E.glabra, E. divaricata* × *E. polyclada*, and *E. alternifolia* root well. Some species need hardwood cuttings to root. The species with resinous leaves are probably the most difficult to root. They are sometimes treated with an alcohol and water dip (1 : 1, v/v) for a short time and then washed thoroughly. This will usually help in the rooting process.

Timing is also a crucial element in the rooting process. The plant needs to be actively growing and well-hydrated. Although ideally it would be good to root the cuttings when the shrub is not in bloom, that is usually not possible. The more floriferous eremophilas tend to be in bloom for most of the year. Because most eremophilas take to pruning and shearing, hard pruning can stimulate active young growth.

Hormones have been successful in stimulating root growth. Quick-dips of 1000 ppm IBA in combination with 500 ppm NAA have been used and work well. Some cuttings can take several months to root even with the hormone treatment.

All flowers and buds should be removed from the cuttings at sticking. Due to the risk of fungal diseases, air movement and sunshine are critical. Misting environments will cause the increase of *Botrytis cinerea* (gray mold). Drenching the cuttings with a fungicide can be of some benefit.

Cuttings should be tipped out at the time of sticking; otherwise they will become tall and leggy. By cutting them back, new buds are initiated and this results in a fuller and more compact plant.

Eremophila species that I have been successful in rooting this way, are *E. alternifolia, E. denticulata, E. divaricata* × *E. polyclada, E. glabra, E. maculata, E.nivea, E. oppositifolia, E. pantonii, E. racemosa,* and *E. weldii.*

The medium for cuttings should be a sterile, well draining mix of either perlite or perlite and peat. Sand or pumice will also work for aeration. Cuttings can be overhead misted anywhere from 1 to 5 times a day depending on air temperature.

Propagating eremophilas from seed has been a trying experience for most growers. The seed drupes are hard and nut-like. They should be sown fresh. The other alternative is to sow old seed that has been sun-baked and subjected to rain. This apparently helps wash out some of the seed's inhibitors. Another method is washing the seed for extended periods of time. The use of gibberellins and other stimulating chemicals have not been tested. Sometimes, the seeds can be extracted from the drupes and germinated in Petri dishes or on blotter paper. Instant Smoke discs are another alternative that could be tried for the treatment of seed.

Germination of the eremophilas by seed can take anywhere from 9 days to 15 months. In their native habitat, emus eat the seeds and they are passed through the digestive tracts. Other places where eremophilas grow include areas where road graders have graded the sides of the roads. This indicates that some form of scarification may have a benefit in breaking the dormancy of the seeds.

Another method of propagation for eremophilas is grafting. Grafting has been used on species that are difficult to start by cuttings or by seed. Most grafts are side grafts or top wedge grafts. The size of the rootstock will determine the best approach. The rootstocks for these grafts are from the *Myoporum* genus; *Myoporum insulare, M. montanum, M. viscosum, M. tenuifolium* (syn. *M. acuminatum*), and *E. bignoniiflora* and *E. desertii* (syn. *M. desertii*), have all been used successfully. The rootstocks should be actively growing, but should not be overwatered during grafting. The grafting process allows species prone to root rotting to be grafted onto

hardier rootstock.

Some rootstocks are more aggressive than the scion and will overgrow the scion. It is important to remove root suckers as they arise or to make sure there are no viable buds below the graft line.

Successfully grafted *Eremophila* species and the rootstocks include:

On *Myoporum insulare* rootstock:

E. abietina
E. bignoniiflora
E. chamaephila
E. cuneifolia
E. duttonii
E. eriocalyx
E. glabra
E. inflata
E. interstans
E. macdonnellii
E. maitlandii
E. mitchellii
E. pentaptera
E. pterocarpa
E. pustulata
E. saligna
E. santalina
E. tetraptera
E. virens
E. viscida

On *Myoporum montanum* rootstock:

E. denticulata
E. glabra
E. ionantha
E. macdonnellii
E. maculata
E. subfloccosa

On *Eremophila bignoniiflora* rootstock:

E. santalina

Eremophilas are a beautiful group of plants that should be promoted and propagated more. They have the necessary elements required for the arid climate and they grow essentially dry. They have showy flowers and make good additions to the garden. Many propagators are working toward solving their propagation quirks.

LITERATURE CITED

Elliot, W.R. and **D.L. Jones.** 1984. Encyclopedia of Australian plants, Vol.3. Lothian Publishing Co. PTY. LTD, Port Melbourne, Victoria.