

Phragmipedium culture in the Riverina region of NSW

-the South American Slipper Orchid

The flowers and leaves of the South American Slipper Orchid, *Phragmipedium* (frag-meh-pee-dee-um) are similar in appearance to the *Paphiopedilum* slipper orchids from south-east Asia but are an unrelated species and have different growing requirements. *Phragmipediums* are found in Central and South America and are mainly terrestrial growing in light friable soils rich in organic matter or are lithophytes growing on rocky granite cliff faces (4). There are thought to be less than 20 species (1). The growing environments are usually very humid with the roots receiving abundant moisture (7).



They have only become popular since the 1980s following the discovery of a brilliant red flowering species (*Phragmipedium besseae*) that grows at 1100m in Peru and Ecuador (1,7) that has been used extensively in crossing to produce more attractive orange and red flowering hybrids. They mainly flower in late winter and spring (3) but flowering can extend throughout the year. Plants with sequential flowering can flower for several months (3).

They are much larger growing than *Paphiopedilums* and some hybrids can grow up to 60cm wide and 60cm high and so require more bench space. There are also dwarf species that only grow about 15cm high. They produce multiple flowers on a spike that can be up to 1 metre high and flowers can be very long lasting with spikes that flower for many months under good conditions. Flowers can have very long petals that hang down for 30cm or more.

They can be grown in a protected shade-house in the Riverina but do better when provided some additional heat in winter in a greenhouse or glasshouse.

Temperature requirements

Phragmipediums are regarded as intermediate temperature plants with the optimum minimum temperature being about 10°C which is higher than for *Paphiopedilums*. Some will tolerate minimum temperatures down to 3°C but they will not tolerate frost. *P. besseae* and *P. schlimii* prefer cooler conditions and *P. xerophyticum* warmer conditions (3). The maximum temperature should ideally not exceed 30°C but higher temperatures up to 40°C will be tolerated for short periods if humidity is raised by misting or other techniques and good airflow is maintained with a fan if necessary. If daytime temperatures are above 35-40°C the light level should be reduced further with additional shading or plants placed down low in the shade house.

Due to their temperature requirements, *Phragmipedium* are best grown in glasshouses where temperature and humidity requirements are more easily satisfied, but growers in the Riverina have had success growing them in a protected shade-house. They do not

require cooler night temperatures to initiate flowering as many other orchids do, but cooler night temperatures do give more intense flower colour.

When grown at cooler temperatures they may not flower as frequently as new growths will take up to 2 years to flower compared to 1 year at higher temperatures.

Light

Phragmipediums generally require medium to bright light (3000-7000fc) (4,5) similar to Cattleyas and Vanda and require more light than Paphiopedilums. This includes the long petaled *P. caudatum* and *P. xerophyticum* (3). Exceptions are the mottled leaf types *Phrag. besseae* and *P. schlimii* that prefer lower light levels (1500-2000fc) and they should be grown lower down on the bench (3). All species must be kept out of direct sunlight. They like more light in winter. They will grow in lower light but are much slower growing (5) and will tend to climb more. Flower colour is also more intense when grown in bright light. Shade-houses in the Riverina should be covered with 50-60% shade cloth and shading increased further if temperatures are above 35- 40°C.



Young seedling plants are reported to require less light (4).

Humidity and air movement

They like high humidity preferably above 50% (3), but will tolerate humidity as low as 35% (5). Sitting them on trays filled with stones and water assists in raising humidity (3). They need good air movement. Growths that do not dry out by evening can get bacterial rot (3). This is a particular problem in caudatum types and their hybrids (3). Fans may be required to aid air movement if fungal or bacterial diseases are a problem. Some growers leave fans on 24hrs where natural airflow is not good such as in a glasshouse.

Water

Plants should be kept moist year round with frequent watering and not allowed to dry out. Plants can be kept a little drier in winter (3). Some growers stand the pots in shallow trays containing water about 2cm deep in warmer weather (3). Phragmipediums prefer tank or filtered water where possible and are sensitive to high levels of chlorine in the water (3). Treated water can cause brown tips on the leaves.

As they have no bulb to store water, plants should be kept moist year round but not soggy. They should be watered in the morning so the leaves are dry by the afternoon to prevent bacterial rot and fungal problems. New growths tend to collect water that can easily result in rotting and plant death. Do not water on cloudy days in winter when they will not dry by evening as this can cause bacterial rot (3). If plants are grown under cooler conditions they

should not be kept as wet as when in glasshouse conditions.

In summer plants can be watered every 2 to 3 days in hot weather but in winter they may require watering only every 7-14 days depending on the potting mix and weather conditions.

Potting medium

Phragmipediums flower best when allowed to develop into larger plants and so should not be subdivided unless necessary. The root systems of Phragmipediums are more robust than Paphiopedilums. They are best grown in deeper nursery shaped pots rather than squat pots favoured by many other orchids.

Repot annually when new growth appears, usually in spring or autumn.

Carter and Holmes Orchids (see web site below) have subdivided Phragmipediums into two distinct groups ('dry' vs 'wet' group) with different watering and potting mix needs (4).

The '**dry**' group are older hybrids containing *Phragmipedium caudatum*, *P. sargentianum* and *P. longifolium* which use a standard seedling grade 5-10mm bark mix containing perlite and sometimes coarse river sand and vermiculite.

The '**wet**' group potting mix contains 3 parts sphagnum moss, one part volcanic rock and 1 part perlite and is for newer hybrids containing *Phrag. besseae* and *P. schlimi*. The 'wet' group should be grown in saucers of shallow water about 2cm deep during the warmer months in a shade-house or year-round in the glasshouse.

Adding polystyrene chunks to the bottom of pots assists in providing good drainage which is essential (7).

They prefer a slightly acid potting medium with pH 5-6 containing no calcium carbonate (lime) (7).

When subdividing large plants it is important to have at least 3 strong growths or leaders in each division, as these will grow more vigorously than new plants with only one or two growths (6). Keep the pot size as small as possible, just large enough to accommodate the roots (6). Trim any damaged or dead roots and let the potting mix fall away. If the plant is root bound, no further trimming is necessary, just pot into a slightly larger pot (6). When repotting the newest growth must be at or slightly below the potting mix surface, as they will not produce aerial roots to grow into the potting medium.

Fertilizers

Phragmipediums are heavy feeders (7) and can have more fertilizer than Paphiopedilums but too much fertilizer will cause leaf tip burn (3). They require of Ca and Mg and special fertilizers developed for Paphiopedilums would be suitable for them. If these are not available additional Ca and Mg may need to be applied as Epsom salts and calcium nitrate



along with normal fertilizers that are applied at quarter to half strength. Dolomite lime application is not recommended as they prefer an acid medium (7).

Some growers find slow release fertilizers cause poor root growth and prefer liquid fertilizers. Generally soluble fertilizers are preferred to solid fertilizers. Alternating soluble fertilizers with seaweed extracts has proven very successful for many growers.

Less fertilizer should be used in winter. Some growers suggest high phosphorus fertilizer in autumn encourages flower development (3) but others actively discourage it (5).

Cultivars for the Riverina region of NSW

Hybrid varieties are the easiest to grow as they have increased hybrid vigour and are more likely to be vigorous growers than species. Most of the hybrids produce up to 6 flowers per spike. Refer to the “Gardening Australia Flora’s Orchids” book and the web articles by Alan Hope and Brian Milligan listed below (7) for more details on the different species and hybrids available.



Acknowledgements and further reading:

This growing guide has drawn extensively on information by local growers and the references listed below.

1. Gardening Australia Flora’s Orchids. ABC Books (2005).
2. Orchids, A practical handbook. By B and W Rittershausen (2001).
3. Slipper Orchid alliance web site culture sheet.
<http://www.slipperorchid.org/phrag.culturesheets.asp>
4. Carter and Holmes Orchids. <http://www.carterandholmes.com/phragcare.html>
5. Culture of Phragmipedium Hybrids by Leo Schordje.
http://www.iosoc.com/forward-2/phrag_culture.htm
6. Orchid garden centre and nursery. Phragmipedium culture.
<http://orchidsgardencentre.com/phragmipedium.html>
7. The Genus Phragmipedium by A Hope and B Milligan.
<http://www.oscov.asn.au/articles2/phrag.htm>

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These notes are intended as a guide only and are composed from available information and local experience. The Wagga Wagga Orchid Society and its members are not responsible for any loss or damage.