



Odontoglossum Alliance

Introduction:

The following is a guideline for growing *Odontoglossum* and its relatives. This group of orchids include *Oncidiums* and other genera native to the Central American regions. The general requirements for each genera are the same however temperature will differ generally due to the difference in native altitudes. *Odontoglossum* are usually native to high altitudes in the Andes where temperatures are much lower. *Oncidiums* however are native to lower altitudes down to some coastal regions. Both these plants grow all year round in all sorts of growing conditions and contain a variety of beautifully coloured flowers, which are easy to grow in the proper conditions.



Pot Type:

A variety of pot types can be used for growing *Odontoglossum* and *Oncidiums*. When potting from flask, small plants may be put into cell trays. As plants get larger they may be placed into standard coloured plastic pots. These orchids prefer not to be over potted and when plants get larger it is common for their stringy roots to crawl out of the edge of pots into others. Many types, especially warmer 'Equitant' varieties with succulent leaves can be mounted; in all cases drainage must be very good for Equitant and thick leafed types.

Pot size used:

Generally *Odontoglossum* are grown in a 3 step system for potted plants and export. Most commercially cultivated plants are sold as potted plants for gifts or as public display due to their fancy arrays of colour. Therefore plants are in good demand when flowers have initiated and sold when 1 large pseudo bulb has become mature:

1. Potting from flask: planting into 1 inch (2.5cm) cell tray or 1.5 -2 inch (3-5cm) pot
2. Second vegetative growth: re-potting into 3 inch (7cm) pots
3. Final potting and flower initiation: 4-5 inch (10-12cm)

Initial plantings from flask can also be into community trays; however most growers now prefer the cell tray or direct potting system. In some cases the very vigorous growing *Odontoglossums* and some *Oncidiums* pot in the second step which means potting will occur only twice.

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Grades to use:

Odontoglossums and *Oncidiums* can be grown in a range of different media as their natural habitats are also varied. However in most cases the media is to have good contact with the roots but also allow for good air movement as well as good drainage. Bark products have always been the preferred media for larger plants of this type.

Initial Planting:

For initial plantings from flask direct into small pots – 1.5 – 2 inch or cell trays, New Zealand moss can be used as well as a fine grade Orchiata chip such as Precision. Sphagnum hydro planters have become a preferable media by some growers for cell trays due to their ease of use, and sterility of the young seedlings. Good quality moss must be used and care must be taken not to keep plants too wet.

A small bark grade such as Precision Orchiata allows for good air and can be easily potted on to the next size without removing any media. It is by far the best media to grow *Odontoglossum*, whereas *Oncidium* are more tolerant to a much wider range of media.

Second potting:

For younger plants being transferred from 1.5, 2inch and/or trays into 3 inch pots, Classic Orchiata should be used. Note that if high quality Sphagnum moss e.g. NZ Sphagnum moss was used to pot the plants initially, this does not have to be removed; the plant and sphagnum can be transplanted with Orchiata placed around it. This is because NZ sphagnum is resilient and will not cause water holding problem in partnership with the bark. If Chinese or poor quality Chilean moss is used this *must* be removed. In markedly warmer climates where humidity may be higher, Power Orchiata can be used however irrigation may need to be more frequent until roots have started to actively grow into the media.

Final potting:

Depending on the climatic type either Classic or Power Orchiata can be used. In each case the Orchiata from the previous pot can either be shaken loose and removed or used again in the next potting. For moderate climates pot into larger 5 inch (12cm) pots with Power Orchiata for *Odontoglossum*. *Oncidium* being a faster grower, especially the yellow cut-flower types, can be grown in Classic Orchiata. For markedly humid climates Power Orchiata is usually sufficient. It must be remembered that these plants, whilst having pseudobulbs, suffer greatly if they are dried out too much.

The following are the approximate amounts of Orchiata which will be required at re-potting:

Pot Size	Previous Media retained (L)	Previous media removed (L)	Approx grams/ pot (40% moisture)	#40L bags per 1000 pots
1.5 inch-2 inch	-	0.060 – 0.100	30 – 60g	1.5 – 2.5
3 inch	0.125	0.250	100 – 125g	6.25
4 inch	0.250	0.550	180 – 200g	13.75
5 inch	0.150 – 0.200	0.750	280 – 300g	18.15

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Time at re-potting:

The time between each potting and re-potting will depend on the climate and variety. *Odontoglossums* and *Oncidiums* are reasonably quick growing and grow all year round (although winter growth can be slightly slower). Plants which are planted from flask into 1.5 - 2 inch pots will need to be transplanted once there are two well developed leaves and the roots are filling the pot. This may be 3 – 5 months (12 – 20 weeks) after initial potting. From there they will be transferred into a 3 inch pot which they will stay for 6 -8 months (24 – 32weeks) or until the psuedobulb is starting to fully develop.



When side shoots start to appear and/or plants are still actively growing but before flower initiation, plants can be repotted into the last size pot for flowering. In each case the plants should get to a stage where it is starting to outgrow the pots. Always repot into a size that allows for 1-2 bulb more to be formed. Plants are potted with the oldest bulb close to the side of the pot and the newer growing bulbs towards the centre.

Spacing's at planting:

There are four aspects which can aid plant growth by the plant spacing's: humidity, disease, light and moisture. All four aspects are linked: when plants are placed too close together the humidity will be increased and air movement is reduced. This leads to increased drying time of the media and a warmer microclimate. These conditions ultimately lead to pests and diseases such as fungus gnats and root rots. Leaves are also likely to overlap as they grow ultimately competing for light.

Plants should all be placed with a slight gap in between pots as well as leaves angled so that they will not overlap. Gaps should be wider as pot sizes increase. With *Odontoglossums* and *Oncidiums*, their growth however is relatively upright and pot sizes do not get large. Therefore spacing's can be relatively close (almost right next to each other) in the earlier stages with much larger gaps provided when spiking is occurring.

The following table is approximate plants per m2 of bench space:

Pot Size	Plants/m2	Spaces between pots	Time in pot
1.5-2 inch (2-3cm)	200 – 300	-	12 – 20 weeks
3 inch (7.5cm)	100	2cm	
4 inch (10cm)	60 - 70	2-4cm	24 – 32 weeks
5 inch (12cm finishing)	30 - 40	One pot space	20 weeks+
Total time			56 – 72 weeks

When spiking occurs, it is important that the flowers are spiked at an early stage to keep them uniform. Also always face the spike the same way as they bend towards the light.

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Humidity:

Humidity is important for these orchids as their natural environment is often subjected to misty conditions. However air movement should always be applied with higher humidity. *Odontoglossums* and *Oncidiums* prefer humidity levels between 55 – 75%; higher levels of 60–80% require good air movement especially in the cooler months. Plants can also tolerate humidity levels down to 40% which can be maintained or increased with morning and evening misting.

Temperature:

Temperature is important to *Odontoglossums* and *Oncidiums* for both growth and flowering. As these plants are natural to more equatorial conditions their preferred temperatures remain relatively constant. Altitude defines their temperature requirements with *Odontoglossums* requiring cooler high altitude conditions while *Oncidiums* requiring warmer more coastal conditions:

Odontoglossums: 10-16°C at night to 18-24°C during the day and can tolerate down to 7°C in winter.

Oncidiums: 12 – 18°C at night to 24 – 27°C during the day. Keep above 10°C in winter.

Although these orchids can tolerate some changes in temperature the diurnal difference is usually 8 - 10°C. The 'Equitant' *Oncidium* can tolerate extremely high temperature, so can some of the intergeneric pot plant hybrids, such as *Burrageara Nelly Isler*.

Many of the species flower at regular intervals regardless of special initiation requirements e.g. some *Odontoglossums* flower ever 10 months regardless of climate. However in most cases a slight drop in temperature during the winter months for a brief period – 4-6 weeks – can help encourage flowering. However those plants cannot bloom at all if the pseudobulb is not properly mature for that purpose.

Like most other orchids air movement is important especially at lower and higher temperatures and higher humidity's. *Odontoglossums* and *Oncidiums* are relatively forgiving which is why they make a very good potted plant.

Light requirements:

Light requirements are relatively simple. *Odontoglossums* require less light than *Oncidiums* but both require a dappled 35 – 60% shade at most times. *Odontoglossums* require 1000 – 1500fc (200 – 300 micromol.m2.s1) while *Oncidiums* can tolerate a high light range of 1000 – 4000fc (200 – 800micromol.m2.s1). During winter shade can be reduced for both to allow higher light if temperatures are cooler and air movement is increased. The Equitant group of *Oncidium* require higher light levels and higher temperatures. Some of the most beautiful species such as the *Otoglossum* are high elevation plants requiring very high amounts of light and cold conditions.

Fertiliser regime and irrigation strategy:

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Both liquid feed and/or controlled release fertilisers can be used with these orchids. As they are growing most of the year it is important that they are being fed regularly. Any standard balanced fertiliser with trace elements e.g. Peters professional 20-20-20 NPK can be applied. Again, it is a good practice to increase the potassium when the bulb starts to be visible at the base of the new growth and decrease the nitrogen slightly.

Liquid feed should be applied to cell trays while granular fertilisers can be used for potted plants. For 3inch and above pots, 4.5gms should be applied to the top of the pot at repotting with a 180 day controlled release fertiliser. Apply extra calcium and magnesium if required. The Granular fertilizer is recommended only for *Oncidium*, as true *Odontoglossum* can be very sensitive. The pot plant hybrids usually available in the trade can be grown with extra fertilizer. Liquid feed has to be applied at every irrigation, use ½ strength of the recommended rate for that fertiliser. In winter feeding times may be reduced to once a month. Check pH and EC regularly.

Irrigation:

Odontoglossums and *Oncidiums* need to dry out sufficiently between irrigations, but not dry out 100%. These orchids have a pseudobulb used for water and food storage; it is easy to see when they are getting stressed as the bulbs start shrivelling. Both automated and manual irrigations systems can be used for these orchids however it is important that the media is continually being checked that it is drying out sufficiently.

During summer irrigation will be required every 2 -3 days, however during winter rates may drop to once every 10 – 14 days. If high light is present and/ or higher humidity is required then a light misting in the early morning or evening will help.

Equitant *Oncidium* need to dry out quickly and completely between watering's or they will suffer from rot. The yellow type *Oncidiums* for the pot-plant trade can grow faster if grown wet all the time, as they have massive bulbs and extensive root system.

When using straight Orchiata, flushing will not generally be required although it is important that the media is checked regularly for pH and EC. If levels do appear to get high then flush may be required.

A general guide for irrigation:

Pot Size	Irrigation time warm climate	Cool climate
1.5-2 inch	1 – 2 days	2 -3 days
3 inch	3 – 5 days	7-10 days
4 inch	5 – 7 days	10 – 14 days
5 inch	5 – 7 days	10 – 14 days

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Pots can be checked for irrigation requirements by lifting or weighing a pot; over time knowledge will build up of the weight of a dry pot requiring irrigation. Do not let pots dry out completely 60 – 70% dry will be okay.

General:

Every 4 – 5 weeks the media of the different pots should be tested to ensure there is no salt build up. Salts will eventually build up on bark due to the exchanges sites; with Orchiata, flushing is not required at each irrigation as salt build up is minimal however it is good to check and carry out a flush every 5 weeks or so.

To check pH, use the pour through technique:

Using a medium to moist pot, place a clean collection container underneath the pot and then apply clean, fertiliser free irrigation water evenly to the top of the pot (the amount will depend on pot size – 4 inch approx 250ml for bark). Collect the runoff (enough for testing – 40ml) and then test. A desirable EC is < than 1.5mS/cm. 1.5 – 2mS/cm is getting high while >2mS/cm requires a flushing cycle of pure water prior to next feeding.

Media itself can also be tested with a 1:1.5 v/v extraction technique and the extract tested although this takes more time and is not practical in many greenhouse situations.

If the temperatures are higher than desired, terracotta pots can be used with a finer grade of Orchiata, such as Classic or even Precision. The purpose is to keep the root system cold, as in most orchids, the root system is the most problematic part of the plant in supraroptimal temperatures.

Water Quality:

This is another aspect which must be checked. Water can affect the plant growth by diseases present, lack of Calcium and Magnesium and build-up of bicarbonates in the irrigation lines. If water is sterilised prior to use through UV light etc. then disease will not be a problem however if water is sourced from wells or local water then testing must be carried out 2 – 3 times a year for water borne diseases. Water is a common dispersal agent for many diseases which affect orchids.

Water should also be tested for the Ca and Mg content as well as the hardness. If Ca and Mg are not present in the water then these must be applied regularly. If the water is hard and contains high amounts of bicarbonate then lime scale may build up in irrigation lines and white marks may occur on leaves of the orchids. This can be corrected by applying an acid such as Phosphoric Acid to the application water.

Troubleshooting with Orchiata:

Orchiata is not a sterilised media; it is in fact packed with natural beneficial organisms which will aid against pathogenic species. In some cases fungal growth may appear. If this is a concern then take good photographs of the fungi and send for ID or send media to a local laboratory for ID. In most cases it may mean that the media is not being allowed to dry out sufficiently therefore reduce irrigation rates.

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Algal growth and fungus gnats: these can sometimes be seen on the tops of pots. Gnats can cause pitting on the leaves of orchids although they only feed on fungi. These are both indications that the media is too wet. Increase times between irrigations and allow the media to dry out.

White build-up on media: this is usually lime scale and is caused by the bicarbonates in the water. Check water pH and add acidifying agents if pH is too high.

Discolouration of leaves: this can be caused by many things e.g. high temperatures and or light which can lead to a reddening of leaves. Low light levels lead to a darkening of leaves. Take photographs and send to a consultant for advice.

Pests are generally not a problem however slugs and snails like to feast on these plants if they can reach them.

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