THE MONTHLY BULLETIN OF THE KU-RING-GAI ORCHID SOCIETY INC.

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Annual Membership : **$15 single, $18 family**

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Next Meeting : Mon 13 December

Venue : ***The West Lindfield Community Hall, corner of Bradfield Rd and Moore Avenue, West Lindfield***.

Covid Restrictions – PLEASE, attendees must be double vaccinated and have registered to attend. ***Your certificate will be checked. Please be considerate to those managing the process.*** Also, if you aren't feeling well on the night, please stay home. It may turn out to be nothing but think of your friends if it isn't.

***** All attendees must wear a mask!! We know it is uncomfortable but please comply. *****

Covid restrictions make it impossible to incorporate our usual Christmas celebration with guests, shared food, drinks, and a monster raffle. **However,** we are able to have a full ***orchid benching***, the ***sales table*** will be operating for small quantities of pots etc, **plus sales of members plants.** There will be a ***normal monthly raffle***, and the ***library*** will be operating. **--- LET'S HAVE A GOOD FIRST NIGHT BACK.**

The hall is open from 6.30pm. Please try and get there early to help set up tables and chairs. No benching before 7pm no matter what but even then, please give the set up team time to get benching dividers and class cards in place. When benching, if you aren't sure where your orchids should go, ask for help from one of the committee at the front door check in or at the front table and they will guide you to an experienced member who can help.

The meeting commences at 8pm and starts with judging and meeting formalities after which ***there will be :***

The Supper Break - Covid restrictions mean it is ***impractical to allow sharing*** of supper supplies, so ***'supper' will be "bring our own"*** except for the hot water. No cups/mugs/tea/coffee/milk/sugar/stirrers will be provided. Nominated members will man the hot water urns to eliminate double handling. Please queue in a Covid safe manner and move away once you have been served. No food will be supplied either but you may bring a nibble for yourself. Just no sharing please (other than in family).

The Speaker- After the supper break, we have a very knowledgeable "Guest Speaker" per our President **Dennys Angove** (*aided by Chris Wilson and Jim Brydie).* The topic is **"Orchid Finds on Local Walks in the Hornsby LGA"**. If you have been getting your covid exercise by marching along street footpaths, here are some excellent ideas for variations that might bring you some lovely new scenery and pleasure while exercising. The bushland around Sydney is always alive with something new in flower, no matter what the season, and not just the orchids.

November Virtual Benching - yet again another wonderful 'benching'. Trevor Onslow's Den. Mousmee below is one of the loveliest coloured cultivars I have seen, and his Capanemia uliginosa is something you are unlikely to see in any but the most exclusive collections. Just magnificent. However, as I have featured both in previous bulletins, I thought just a front page mention would have to do this time. For the Mousmee article see Sept 2013, for Capanemia, see December 2020.

The third gem to the right is a softcane seedling created by Chris Wilson. I think it is just lovely, but as I wrote up Softcanes only last month, for now I just say it is a top creation Chris, and congratulations.

Den mousmee

Capanemia uiginosa

Den Yodigimi x Oriental Beauty

Society News (if anyone has a news item, please phone Jim on 9476 3383, or email at *jimbrydie@aussiebroadband.com.au*)

President Dennys' Desk – The good news is that we will be restarting our meetings on the 13th December. Note that this is the **second Monday,** not the third as we usually meet. We will not be having a Christmas function this year but when restrictions are removed, we will certainly have a celebration. The December meeting will start at the normal time of 8 pm but there will be no culture class since restrictions are in place and we need the room to accommodate as many members as we are able to - a maximum of 48.

*Normal benching rules will apply (no limits), with ***benching from 7 pm***. Benching cards will be dispensed, where necessary, by Chris Wilson. Please bring your own pen.

*We will need folk there from 6.30 pm to help setup. My back is STILL crook these days, so the more folk involved the better. We will not be running supper but will have the urns running so please remember to bring your own mugs as well as tea/coffee/sugar/milk makings for tea/coffee and your own munchies.

*We will be running the sales table WITH a member's plant sales service. However, please remember we will be closing sales after the supper break. The regular raffle will also be run. A list of COVID plan procedures that we will need to follow will be provided in company with this bulletin. You will need to ***register your attendance* BEFORE *THE MEETING.* On arrival, *use the QR code available in the foyer and have your vaccination status checked before you enter the hall. You will be given a sticker to confirm checking.*** We will have hand sanitiser available.

* If you have received both vaccinations and would like to come, please advise me as soon as possible as to how many in your party via the KOS email address or SMS me on 0438877689 with "KOS Dec 13th yes and attendees names". If you are not sure about using SMS then ring me on 0438877689.

The rules are in place to reduce the personal COVID risk of members to the lowest level possible.

Appointment of Patrons – I am pleased and honoured to announce that Pauline and Trevor Onslow have accepted the committee's unanimous invitation to take up the role of patrons for our wonderful society. They have served and continue to serve our society with dedication and skill, and we are so fortunate to have them still doing so.

Benching competition – The committee discussed the competition situation at length, and it was decided that the benching scores for the previous two years will be added to the new competition starting at our December 2021 meeting. It was concluded that all the effort put in by members in the preceding two years should not be wasted.

Membership renewal – It is time to renew. You can pay on line or obtain a form from Jessie Koh and pay in cash.

Member's welfare – please remember, if you need to speak to someone immediately then you are most welcome to contact me at any time, 24/7 on 043 88 77 689.

Society News

Membership Fees – And now, while you are all in a good mood, I must remind you that the fee free year is over and that members who wish to remain members must now pay their annual dues. Current fees are $15 single, $18 family.

Now how cheap is that ??? You get to come to 12 meetings a year (we hope anyway), make great friends, learn new things every month, get great monthly bulletins (or so says the bloke who writes them), and all for a bit over a measly $1 a month. Fees are due now. I won't tell you the deadline because why would you want to know? Just pay now so I don't have to tell you what happens if your time runs out.

You can pay online by bank transfer to ***Westpac Bank, BSB No 032 188, account name - Ku-ring-gai Orchid Society Inc. and account number 103568***. If you use this method, please use ***your full name as the payment description***.

You can also pay in person at the front table at the next meeting or mail in a cheque.

Please note though, if you pay in person or by mail, we want you to include a completed '***payment advice form'*** to submit with the payment to Jessie Koh. It gives us a paper record & helps keep track of who has paid. A copy of the form will be sent out with this bulletin and forms will also be available at the meeting.

Future dates

Sat 11 - Sun 12 December 9am - 3:30pm both days, Royale Orchids Open Weekend, 70 Brieses Rd, Peats Ridge

Mon 13 December, Ku-Ring-Gai OS Christmas meeting. See details above.

25 December – Christmas day. Family get together. (PS: Don't talk to family about orchids, you'll drive them crazy.)

19 February 2022 – Species OS annual Show and orchid auction day at the West Pennant Hills Community Church 41-43 Eaton Rd, West Pennant Hills. Catalog changes are being made presently - ask Jim Brydie for a copy after 18 December - *jimbrydie@aussiebroadband.com.au*

Builder's Humour – the apprentice was sent down to the lumber yard to buy some timer. He goes up to the sales desk and says I need a load of 4 x 2's (50mm x 100mm for you non DIY types).

The sales clerk asks "how long do you need them?"

The puzzled, apprentice says : I don't know, but it will be a pretty long time because we are building a house.

BULBOPHYLLUMS - Jean Fulcher

Bulb barbigerum
single flower

Bulbophyllum is the genus with the largest number of species in the Orchidaceae-about 2000 or so! They are found in all tropical areas on Earth, in Africa, Mexico and Central America and the north of South America, as well as Australia and New Zealand, but the largest number are found in Tropical Asia, with the epicentre being the Island of Papua New Guinea. Plants and flowers have widely diverse morphology, but one of the defining features is that the labellum is attached to the flower in such a way that it can move and jiggle about in the slightest breeze.

Bulbo expert Bill Thoms tells us that there are 3 key criteria for determining if an orchid is a Bulbophyllum.

1. There is only one joint in the pseudobulb
2. The inflorescence must arise from the base of the plant or along the rhizome
3. The lip must be mobile. That is, connected with a flexible joint

Flower and plant size varies from very large to extremely tiny. Some have foul odours, while most have very little or no scent. The genera Cirrhopetalum and Trias have recently been recombined into Bulbophyllum and new discoveries are still being made and described as areas of the Philippines, Malaysia and New Guinea are being explored.


used to be Trias cambodiana


was Cirrhop. makoyuanum

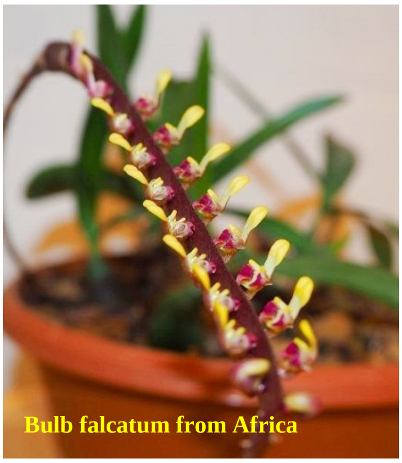
Bulbophyllums are my current favourite orchids, but that wasn't always the case. When Geoff and I first started growing orchids our interests and knowledge extended to Australian Natives, Cymbidiums, Cattleyas, and, thanks to the late Barney Greer, Stanhopeas. Over the years, as our knowledge and tastes broadened, we have had many favourites, and currently share a fondness for Dendrobiums and Species of all kinds, and while Geoff has a particular liking for Phalaenopsis, I am fascinated by Bulbophyllums. … Why?

I have always liked the weird and wonderful flowers, and there are plenty of those to satisfy anyone.


Bulb minutissimum
psbs 2.5mm wide

There are the Australian Bulbos. - 26 of them. They grow close to the coast in NSW and Queensland, and include two of the smallest Bulbos. in the world, Bulb. globuliforme and minutissimum (the latter has pseudobulbs only 2-3mm wide). Bulb. macphersoni is another small one which can make a lovely specimen when mounted.

The New Guinea Bulbos can also vary widely - from the huge leaves of Bulb. phalaenopsis and fletcherianum to the tiniest. Bulbos phalaenopsis and fletcherianum are the biggest and have the dark red flowers associated with the worst smell to attract flies, but they sure are spectacular! You can see the size of the huge leaves in this picture of David Banks standing beside plants of fletcherianum in the wild. Plants this size need lots of space when adult, and need heat and humidity all year, so they are not easily grown without heating - at least in Sydney.


Bulb falcatum from Africa

On the other hand, the African Bulbo species like falcatum have a long rachis with little flowers that look like miniature soldiers marching along each side-very cute!

When we first started noticing Bulbos there were not many available in Sydney. Our collection started with a large mounted piece of Bulb. careyanum; a species with a little brush of brown flowers, and a couple of the daisy like Cirrhopetalums (as they were then) like pulchrum, (now bulhartii) and pulchellum, (now trigonopus). Both with pretty pink circular heads of flowers. Bulb. wendlandianum, Bulb. fascinator, and Bulb. putidum were around, as was Bulb. rothschildianum. We acquired a large plant of Bulb. medusae, mounted on a large treefern slab and it grew well for us and flowered spectacularly. I guess that sparked my interest.

Currently, our collection seems to have a predominance of the old Cirrhopetalums, from Bulb. hirundinis (a tiny one), to graveolens (a weird one), to longissimum and rothschildianum, and many more. We also have a miscellaneous lot - mastersianum (not a Cirrhopetalum type, although it looks like one!), medusae, echinolabium and grandiflorum (from New Guinea), plus many more.


Bulb hirundinis


Bulb majohannae

I grow most of the Bulbos in sphagnum moss in shallow trays, some in normal mix if they are very large plants. I have a few mounted, but we don't have great success with them, as our watering tends to be less frequent than mounts need.

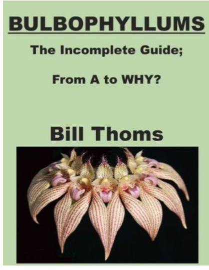
One of the barriers to growing Bulbos has been the fact that most need heat in winter in most of Sydney. Growers near the coast or further North can grow without heat, but I have found most need warmth in winter at Hornsby Heights. There are a few well known ones that don't however. Bulb. rothschildianum and its hybrids flourish in the bushouse all year. Bulb. Elizabeth Ann, and Bulb. Fascination are the two most well known hybrids. I have also found Bulb. longissimum will grow and flower for me in the bushhouse. I am trying a couple of others also.


Bulb rothschildianum


Bulb Elizabeth Ann 'Buckleberry'

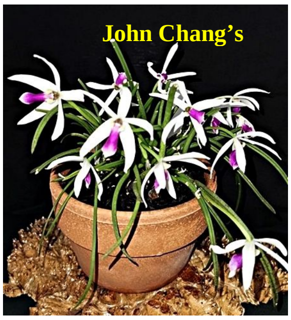
I don't grow many hybrids, because I find many look very similar to each other, but I do have Bulb. jacobsonii x frostii and a nice little yellow Cirropetalum hybrid rejoicing in the name "Supat Warawongwasu"! Bill Thoms in the USA has made many hybrids, and growers in Thailand are also producing hybrids. These days it is easy to find both species and hybrids, so give it a go, you might have just the spot for a weird and wonderful, or just a pretty one. The flowers are endlessly fascinating as the labellums and appendages flutter and bob in the breeze!


Bulb Supat Worawongwasu



For those of you who may be interested, Bill Thoms wrote a very good book called "Bulbophyllums: the Incomplete Guide: From A to Why?". It is a very well illustrated book and a good guide to the Genus and its hybrids.

Leptotes bicolor – November's VB showed several lovely plants of this lovely Cattleya relative, but surprisingly, we don't see this easily grown species often enough.


John Chang's


Jim Brydie's

There are 9 species in the genus Leptotes, and they are found from SE Brazil to Argentina and Paraguay. More or less centred north and south of Rio de Janiero. They occur in essentially coastal rainforests at moderate elevations. All species are miniatures and have short fleshy leaves that are distinctly terete in all but one or perhaps two species.

For small plants, Leptotes have relatively large flowers and they are always popular. Leptotes bicolor is by far the most commonly grown. Most likely because they are the least demanding for climate and easiest to grow. They are usually grown to specimen plants because they are not rapid growers and don't overcrowd themselves, but once a grower decides to break up a specimen, divisions are commonly available.

The sepals and petals of Leptotes bicolor are always white as far as I know, and the lip is always a purple to magenta colour but the intensity of the lip colour and extent of lip colour does vary. The shape is also variable to the extent that the white segments usually claw forwards or backwards to varying extents. The judging system for orchids regards flat overlapping petals and sepals as the most desirable, and who can argue against that when you see some of the magnificent hybrid Cattleyas, but Leptotes don't seem to have read the rule book. Personally, I find their shape quite appealing. Especially when you see a specimen plant like this one at the left with a large number of flowers occupying a small space.


From Pots and Petals website

How is that for a bunch of flowers?

As to culture, you can see from the top two pictures, John Chang is growing his in a pot.

If you look closely though, it seems to be a small plastic pot sat in a terracotta pot for display. Mine is growing on a cork mount (it is not growing on the Robinia tree it is hanging on). Both orchids are doing well but both growers are rather experienced.

For many years I grew one plant in a pot and one on a mount for comparison. Both grew well but I found that the one in the pot insisted on it being a shallow terracotta pot with holes in the side, and even then, after about 7 years without repotting, it began to decline. How dare it go backwards I thought, when its cousin on the cork mount had been mounted for 10 years and was racing ahead. And by the way, although the amazing specimen on the left from the 'PotsandPetals' website appears to be growing in a pot, it is described as growing on a wood mount so apparently it is sat in the pot for the picture and it isn't a testimony to Leptotes pot culture.

The habitat these plants grow in is described as 'drier areas' although I haven't found much expansion on that description. The fact that they are succulent and terete leaved tends to support the idea that they take advantage of whatever water they get and conserve it, and that theme would also suggest that they would not like their roots to stay wet for long. All of which is consistent with my own experience with growing them. It grew ok in a squat, side-holed terracotta pot until the bark based medium began to break down too much and stayed wet too long after watering.

My recommendation for someone trying Leptotes for the first time is to try them mounted on cork, even if you don't usually grow on mounts. This is one that does appreciate it and isn't touchy. Choose a reasonably sized piece of cork to allow for growth if it gets going. Also, don't hang it up too high. They seem to appreciate a shady area with reasonable air flow and a bit of humidity. In a shadehouse, the humidity is much higher closer to the ground. I grow mine in my roofed shadehouse so that I can control the water they get when the weather is wet.

Like most orchids, they seem to like a slight rest in winter, usually coinciding with reduced rain in the cooler months. For Leptotes, rainfall in its natural habitat does reduce in winter but it isn't heavy at any time of the year. Rainfall averages 105 – 135 mm per month from Nov. to April, and 40 - 50 mm from June to August, so although they 'rest', it is not as sharply delineated as the rest of a deciduous Catasetum, or of a softcane Dendrobium.

Leptotes unicolor ►

And just to whet your appetite in advance, the other Leptotes species I have seen about Sydney is Letotes unicolor. This is a smaller plant with more stubby growth and lovely pink flowers. It seems to come from slightly lower elevations and grows near rivers so I am guessing it may need protection from temperature extremes, and from overwatering.

There aren't many Leptotes hybrids about just yet, and those I have seen certainly aren't much, but who knows what the future may hold for the introduction of crosses incorporating this interesting genus?

Miniature Maxillarias. This cute picture of Maxillaria paranaensis from the Nov. Virtual Benching has inspired me to tell you about a few other minis in this very curious genus containing a mixed bag of species. My curiosity about the variability of Maxillaria species made them the topic one of the first Powerpoint talks I ever did around Sydney's orchid clubs.

But before I start, and I know you probably hate all this name changing stuff, but 'paranaensis' is just the oldest, yet also the latest name for what used to be two other species – Max. juergensis and Max. cogniauxiana. After a couple of attempts to move the group that encompasses this/these species to a new genus, it presently find itself still a Maxillaria but there seems to be agreement that what were originally described over the years under multiple different names, are really all the same. The oldest recorded name for any of them was paranaensis (1882) so now that they are just one species, that is deemed the name that should apply.

I doubt that that will be the final end to the debate though, because the juergensis and congiauxiana that I have seen, while similar, also look distinct. Perhaps we will end up with varietal names within paranaensis.

Maxillaria is a quite large genus. It contained over 600 species at one stage but many sub groups have since been split off and made into separate genera and I suspect more of the same is still to come. However, no matter what they do, Maxillaria will always be a wide, varied, and interesting genus including some very attractive orchids. But for today, I don't want to look at the whole genus. Let's just look at some of the cute miniatures.

First, probably the most distinguishing feature of a Maxillaria is that they always have just a single flower on each inflorescence. You might think that sounds rather boring and unexciting but the oddball thing is that they usually throw up multiple simultaneous spikes from each bulb so they can have a heap of flowers all at the same time. The picture of Maxillaria speciosa at the right illustrates the point but I must admit that the miniature types like paranaensis are not quite so multi flowered per bulb.

These mini growing types tend to be close packed and mat forming and don't need to have so many flowers per bulb because the mat of plant has large numbers of bulbs, and the bulbs flower simultaneously anyway. The plant taken as a whole has plenty of flowers to attract pollinators.

So, how about a few examples of the cute miniatures worth seeking? Check out the ones below.

Max. notylioglossa

Max schunkeana (plant 15cm flrs 25mm)

Max. seideliii

Max sophronitis

Max cogniauxiana (syn paranaensis)

Max vernicosa

Max notylioglossa – This cute little scrambling matt former isn't as dense a cluster as the others. It comes from most of the northern end of South America in wet montane forests at elevations between 1000 and 2000 m. The pseudobulbs are spaced but when grown in a wide shallow pot it soon criss-crosses back and forth over itself to create a close mat of plant. When it flowers, it covers itself in cute little 2cm green flowers. Grows cold in Sydney.

Max schunkeana – Now how is that for stunning flowers. That is really black, and they are about 2.5 cm across. The orchid comes from only a relatively small area and is only found in Espirito Santo state in Brazil which is a narrow state along the Atlantic coast just above Rio de Janiero. It is also a rainforest plant but occurs around 600-700 m. The area isn't really tropical so it will grow cold in Sydney in moderate areas but would need protection in colder areas.

Max. seidelii – I haven't grow seidelii but it looks a beauty. It is one of a small group within Maxillaria called sect. Urceolatae. They are all dwarf species that form very tightly clustered little plants that make balls of bulbs and leaves.

The one I grow is Max. vernicosa (also pictured above) which has yellow flowers which are about a quarter the size of the white seidelii above. But all of these tiny species are worth growing. They cover themselves in flowers once a year and are very pretty.

Seidelii and vernicosa both come from coastal Brazil at moderate elevations. They are cool shady growers. Many recommend growing them mounted but I grow mine in a tiny terracotta pot in relatively fine mix. They don't like wet feet so keep them where there is air flow and where they dry after watering.

Max. sophronitis – Surprisingly for such a stunning flower, this orchid is easy to grow and not hard to acquire. The problem however is how to flower the cursed thing. I grew one for 20 years and experimented with many scenarios to get it to flower but not a single one. We see the orchid benched in flower at meetings from time to time but I always question the grower and frankly, not one really knew why it flowered this time and not others. A mystery.

Max cogniauxiana, juergenis, or Max paranaensis – If you compare the pictures above, you will see that the plant and leaf structures are virtually the same, it's just that what we all called cogniauxiana is a much smaller bulb and leaf and the flowers tend to be about 8 to 10 mm. What used to be called juergensis is about twice the size and its flowers can get up to 22 mm. If the botanists now tell us they are one and the same then so be it. The species we knew as juergensis used to be listed as coming from Ecuador, Bolivia and Brazil in tropical wet forests at low to moderate elevations. Cogniauxiana was listed as from coastal southern Brazil.

If they are one and the same, then the 'juergensis' types are the warmer growing more northerly types. When you buy Max paranaensis these days you should ask questions as to origin or type. Cogniauxiana types grow cold in Sydney.

Philosophy - Growing old is mandatory; but growing up is optional. Sometimes wisdom comes with age, sometimes age comes alone.

Orchid Nutrition and Hydration --- Part 1 - Feeding Your Orchid - by Seong Tay

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All living things need food which provides the energy and building materials to function, live, grow and reproduce. Animals are able to move about in search of food which may be in the form of other animals or plants.

The food animals eat have to be broken down in the alimentary system (gut) into very small particles like amino acids, peptides, sugars and fatty acids to be absorbed into the body of the animal.

Plants, on the other hand, are fixed in their positions, so they have to send out roots in search of food and water. Because roots are unable to break down organic material, the nutrients they absorb have to be in very simple forms as inorganic molecules and ions which are soluble in water. Many orchids form a symbiotic association with a fungus called mycorrhiza which facilitates the uptake of nutrients from the environment and converts them into forms of nutrients that the orchid can use.

Primary Macronutrients

While the main components of food in animals are proteins, carbohydrates and fats, the main food for plants are Nitrogen, Phosphorus and Potassium which are taken up in the largest amounts. These are called primary macronutrients and are always on the fertiliser packaging in the same order N (for nitrogen), P (for phosphorus), and K (for potassium). For example, N:P:K of 13 : 2.2 : 17 means the fertiliser has 13% of elemental Nitrogen by weight, 2.2% of Phosphorus and 17% of Potassium by weight.

The numbering of NPK may be different in different countries. In Australia, NPK is in the form of percentage of the elemental nitrogen, phosphorus and potassium. In the US, N is the percentage of elemental N, P is the percentage of P2O5 (phosphorus pentaoxide) and K the percentage of K_2O.

Macronutrient Uses in the Plant

- **Nitrogen** is required in the production of proteins, chlorophyll and other organic compounds for green leafy growth. Deficiency results in stunted growth and yellowing of leaves (chlorosis). Over-fertilising with Nitrogen resulting in large green growths with poor or no flowering.

  Nitrogen in fertilisers may be in the form of nitrates, or ammonium compounds or urea or combinations of these.

  Nitrates are ions which are readily absorbed. Ammonium compounds have to be converted to nitrates before they are absorbed. Urea has to be broken down by bacteria into nitrates before they can be utilised. In cold weather, do not use urea-based fertilisers. Urea is the main source of Nitrogen used in so-called foliar fertilisers.
- **Phosphorus** is necessary for root growth, as energy carrying molecules (ADP, ATP) in plant metabolism, respiration and flowering.
- **Potassium** is required for overall growth, protein synthesis and general health of the plant, resistance to infections and environmental stress.

Secondary Nutrients

Other nutrients called secondary nutrients are also basic and required, but in relatively smaller amounts. These are:

- ***Calcium*** is required in large amounts by all plants for the formation of cell walls and cell membranes, structures very similar to the role of calcium in other skeleton. It also facilitates uptake of other nutrients.
- ***Magnesium*** is the core component of chlorophyll. In magnesium deficiency, the leaf is yellow between venations and the plant is stunted due to reduced photosynthesis. Over supply of magnesium competes with the absorption of potassium.
- ***Sulphur*** is required for the structure of proteins and functioning of enzymes and it plays an important role in the defence against stresses and pests.
- Trace elements are other minerals required in very small amounts. These include *boron (B), molybdenum (Mo), manganese (Mn), copper (Cu), zinc (Zn) and iron (Fe).*

Trace elements act in combination with the other macronutrients and secondary nutrients to achieve continuous growth and healthy growth of plants. Iron is involved in the synthesis of chlorophyll, and it is essential for the maintenance of chloroplast structure and function.

Photosynthesis

Carbon dioxide in the air is as important, if not more important, than the other elements mentioned in fertilisers. Carbon is the main component of wood and fossil fuels. In the presence of light energy, the chlorophyll in the leaves converts carbon dioxide absorbed by stomata in the leaves from the air and water absorbed by the roots into sugars which in turn provide the energy for the metabolic, structural and reproductive processes of the plant.

The lack of light, chlorophyll, carbon dioxide, or water will severely affect the growth of your orchid.

Types of fertilisers

1. Water-soluble fertilisers are usually in the form of powders have to be dissolved in water before application.

Advantages:

a. Their nutrients become immediately available to the plant via the roots.
b. The amount of fertiliser applied can be controlled as required.
c. Timing of application of fertiliser can be controlled according to the weather.
d. You are fertilising and watering your orchids at the same time.
e. Liquid fertilisers can be used on all types of orchids – mounted orchids, orchids grown in pots using with all types of potting material or in the ground.

2. Slow release fertilisers are in the form of granules or small plastic capsules of soluble fertiliser encased in polymer coatings. These fertilisers release their nutrients through their polymer coatings slowly during watering and are formulated for specified durations, e.g. 6-8 weeks, 4-6 months.

Advantages: No necessity to prepare a fertiliser solution each time you wish to fertilise your plants. Just water.

Disadvantages:

a. Not recommended for orchids which are sensitive to fertilisers as the rate of release of fertiliser cannot be accurately controlled.
b. They are affected by temperature, releasing more in warm weather or very little in cold weather.
c. Fertilisers may not last the specified duration during prolonged wet weather.
d. They are not effective when the potting materials are extremely coarse as water runs through without dissolving the fertilisers.

3. Organic fertilisers such as hoof-and-horn, blood-and-bone, poultry manure (Dynamic Lifter), Charlie Carp, etc. release their nutrients over a long period as they become broken down by bacteria present in the potting mix.

Advantages:

a. Organic materials and fertilizers improve the soil texture, allowing it to hold water longer, and increase the bacterial and fungal activity in the soil which in turn produces humic and fulvic acids which act like vitamins for the plants.
b. There is little risk of toxic build up.
c. Environmentally friendly
d. Long lasting. Not necessity to fertilise so often.

Disadvantages:

a. The nutrient levels are small compared to the bulk of the fertiliser.
b. The seasons affect the availability of nutrients to the plants. Microorganisms are required to release the nutrients from organic fertilisers and microorganisms require warmth and moisture to work effectively.
c. It takes time for organic fertilisers to show their effectiveness.
d. Generally, organic fertilisers may be more expensive in respect of the total amounts of nutrients in them.
e. Organic fertilisers promote faster breakdown of potting mediums like coconut chips and bark.

What fertiliser to use?

The type of fertiliser – water-soluble, slow-release or organic – depends on:
a. The type of orchid grown – whether they are epiphytic or terrestrial.
b. The type of growing media used. For example, when large pieces of bark are used for Vandas or Cattleyas, the bulk of slow-release and organic fertilisers get washed to the bottom of the pot where it serves no function or is lost.
c. The amount of time you spend on your orchids. (applying soluble fertilisers can be time consuming)

Factors to Consider in Choice of type of fertiliser:

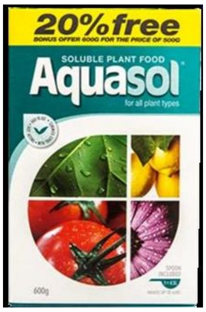
1. Using only water-soluble fertilisers. Good for growing hydroponically, on mounted orchids or orchids growing in large bark.
2. Using slow-release fertilisers. Effective for terrestrial orchids like Cymbidiums in large collections where time spent on the collection is limited.
3. Using organic fertilisers. Requires microorganisms like bacteria so less effective in cold, less effective in coarse open mediums or on mounted orchids, ideal for environmentally-conscious growers.
4. Combination of the different types of fertilisers. Where possible, use of small amounts of slow-release or organic fertilisers supplemented by water-soluble fertilisers. Recommended for Cymbidiums.

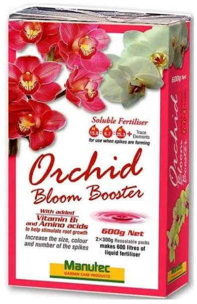
Choosing the N:P:K

Different fertilisers have different N:P:K. Choosing the correct N:P:K for your orchid depends on what you want of your orchid. The fertiliser may also state the amount of Calcium and Magnesium in it, as well as whether it has trace elements incorporated into it.

For example, fertilisers like Peters Excel which has all the necessary elements in it are called ***complete fertilisers***. Most orchid growers today use Peters Excel which comes in 2 forms:

‘Grower’ which has an N:P:K of 15:2.2:12.4+5Ca 1.8Mg+TE
‘Finisher’ which has an N:P:K of 13:2.2:16.6+5Ca1.2Mg+TE





Other water-soluble fertilisers include : Campbells blue (grower), Campbells yellow (flowerer), Aquasol, Thrive, and Manutec. There are many others.

How to use water-soluble fertilisers – You could either :

1. Use a complete fertiliser like Peters Excel all year round. Or,
2. Rotate a high Nitrogen and a low Nitrogen fertiliser according to the seasons. Many growers still use Campbell’s high and low Nitrogen fertilisers. Be careful when to use them, otherwise your orchids will not bloom! Or,
3. Use of recommended rate by manufacturer periodically. Or,
4. Use of half-strength or one-third-strength of recommended rate every watering. If you do this, after every 3 to 4 waterings, flush out accumulated salts with plain water.

*** My recommendation is to use a complete fertiliser like Peters Excel all year round at half-strength.**

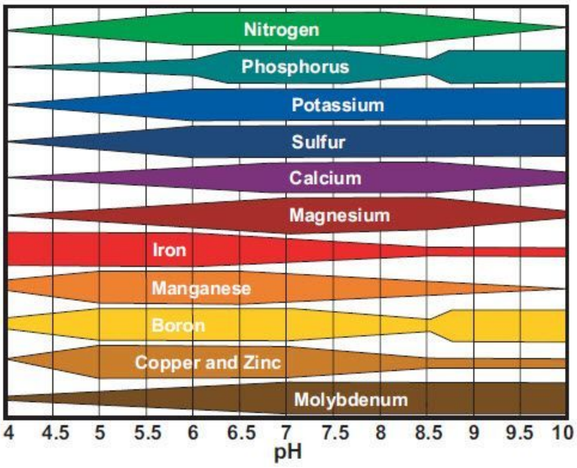
Factors affecting fertilising

1. Temperature. As light levels and temperatures begin to fall, reduce the frequency of watering and fertilising. Use a fertilizer low in nitrogen (which should be nitrate nitrogen, not urea nitrogen) and high in potassium.

During sunny and hot weather, use a more dilute fertiliser solution as the plants require more water during transpiration in attempt to cool down the leaf surfaces. Blackened leaf tips are often due to use of high concentration of fertiliser and well as evaporation of fertiliser-water droplet at the leaf tip becoming concentrated as it dries.

2. Potting medium. When fresh bark is used in potting, the fresh bark absorbs nitrogen in the fertiliser, a process called “nitrogen drawdown”. Use a fertiliser with a higher concentration of Nitrogen. When microorganisms start to break down the bark, the Nitrogen becomes available to the plant again.

3. pH. pH is the negative logarithm of the hydrogen ion concentration. Neutral pH is 7.0. Values below 7.0 are acidic and values above 7.0 are alkaline. pH can affect the solubility of chemicals in water as well as the uptake of nutrients by orchid roots. The ideal pH for absorption of most of the nutrients is between 6.0 and 8.5



4. Electrical Conductivity (EC) - EC is an index of the amount of electrical charges (ions) in a solution which reflects the amount of electrolyes and therefore the amount of salts in that solution.

Many people talk about the importance of EC in determining the amount of fertiliser to add to a solution. EC is not the same for all fertilisers. It is relevant only to a particular fertiliser as specified by the manufacturer. This is because the components of the fertiliser are different in each of the fertilsers.

5. Osmolarity/Osmololity - Osmola**rity** refers to the number of solute particles per 1 L of solvent, whereas osmola**lity** is the number of solute particles in 1 kg of solvent. **Tonicity is the measure of the osmotic pressure gradient between two solutions.**

Osmolarity is the concentration of particles in a solution. The particles may be large like sugar or small like electrolyte ions. If there is a membrane like a cell wall separating 2 solutions of different osmolarity, the solution with the higher osmolarity will draw water from the solution with the lower osmolarity.

This is important because a strong fertiliser solution will draw water from your orchid, dehydrating it and killing it.

Do not think that more fertiliser will always make your orchid grow better!

Orchid Nutrition and Hydration --- Part 2 - Watering Your Orchid - by Seong Tay

When to water your orchids - The frequency of watering depends on: Temperature, Humidity, Air movement, Type of orchids, Potting medium, Mounts and pots with large aeration ports (Vanda pots)

High temperature and low humidity increase the rate of evaporation from plants. When the rate of transpiration exceeds the rate of uptake of water by the roots, your orchid will look limp with dull droopy leaves – a good sign that your orchid needs watering.

After watering, your orchid should pep up again. ***If it remains flaccid, something is wrong! Watch out for the condition of the roots.***

When the humidity is high, orchids with a spongy coating on their roots called velamen are able to absorb moisture from the air. These velaminous roots are especially useful in tropical regions where the humidity and temperature are high.




*** How to avoid killing your orchids by over-watering

During summer, frequent watering is not much of a problem as the plant takes up water and nutrients to grow, and as a result the growing medium dries up quickly. Winter time is when most orchids, especially the warmth-loving ones, succumb to the physical cold, and fungal or bacterial infections and this is often due to over-watering.

Water is a good conductor of heat and when the potting medium is wet, the roots become cold like the surrounding temperature and this damages the roots of cold-sensitive plants. The orchid will turn yellow, soggy and die.

If watering is minimal in winter, like a fine spray of water on top of the plant and pot in the mornings, allowing the plant to dry before the evening sets, it will keep the potting medium dry, and air, being a bad conductor of heat, will keep the plants warm, very much like the jacket you wear.

I use clear pots as an indicator for determining when to water. Clear pots allow you to monitor the moisture content of your potting medium and the condition of the roots. **On cool or cold mornings, when you see moisture on the sides of the clear pot**, the air in the pot is 100% saturated with moisture, and the roots are able to absorb this moisture through the velamen.

The colour of the potting medium is also a good indicator. A dark colour means it is wet or moist. A light colour means dry.

The colour of the velamen on the roots will also tell whether your plant needs watering. A green-grey colour indicates that the roots are not dry and the plant does not need watering. (refer to the row of 4 pictures above)

Energy Efficient Glass Savings -- Last year I replaced all the windows in my house with those expensive, double-pane, energy-efficient kind. Today, I got a call from Home Depot who installed them and the caller complained that the work had been completed a year ago and I still hadn't paid for them. Well, just because I'm a Senior Citizen doesn't mean that I am automatically mentally challenged. I told him exactly what his fast-talking sales guy told me last year -- that these windows would pay for themselves in a year ---.

Well it's been a year, so they're paid for, I told him. There was silence at the other end of the line, so I hung up.

He never called back. I bet he felt like an idiot.