

For those who don't want to hunt for the ingredients, I have also tried Debco native potting mix (low nutrient) 3 parts plus 1 part of propagating sand. I have successfully grown many easier species in this mix, but I find it retains more moisture than my basic mix. This is a pine bark based mix.

Other growers use a soil-less mix made up by Bio-Grow, containing different grades of pine bark, some eucalyptus leaves and added nutrients which works extremely well for them. Other ingredients used: Euci mulch - replacing buzzer chips? Perlite instead of propagating sand - be careful of the dust, it can cause a cough. Damp it down first or wear a mask. You have to experiment with your conditions and available ingredients. The above suggestions are a good starting point. When you try different ingredients, consider their properties, e.g, fine pine bark for moisture retention, slowly, broken down for nutrients; leaves from eucalypts, source of nutrients more quickly available. And whatever you combine together, remember it must retain enough moisture for growth, BUT drains well. Watch your plants, they will respond, and experiment until your plants are growing well. (Thank goodness for the Tuber Bank, a ready source of replacement tubers!)

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WATERING TERRESTRIAL ORCHIDS Written and presented by Richard Thomson

How and the frequency of watering of an orchid depends on the species of orchid, the potting mix components and their size, how compacted the potting mix is and, hence, the amount of air space within the potting mix, the time of the year, the day and night temperature, air movement around the pot, especially wind, and the amount of sunlight reaching the pot. The humidity of the environment in which the pot and plant are kept will affect moisture loss, even in different areas within one orchid house. Thus, getting the watering correct involves observation, practice and a few aids to help.

At repotting, I tap the pot gently to settle the mix after the potting. I do not push it down. I try to treat each pot exactly the same, hoping that this will give pots similar water needs. I mulch with a thin layer of *Casuarina* needles on the top of the potting mix surface - to reduce disturbance when watering and to slow down the drying of the upper section of the potting mix and, hence, reduce the frequency of watering.

A useful aid is to make up some extra pots without orchids, and then you are able to dig into the pot and see if watering is required. You can also pull the name tag from a pot and observe the dampness on the end that has been sitting in the mix.

When watering what do we want to achieve? We want to have water (moisture) in the potting mix where the plant resides, not too little so the plant dehydrates, or too much so the plant cannot get enough oxygen through its roots.

Reading the signs Watch how the water soaks in - does it soak down through the mix or does it run to the side? Is the pot light or heavy?

- a) If the water pools on the top of the pot it usually indicates a problem—a dry or over compacted mix.
- b) If the pot is light and or the water runs to the side of the pot, it usually indicates a dry pot which may need a gentle repeated watering in the centre area until the water runs into and through the mix.
- c) If the pot is very heavy in comparison to other pots then it is most probably too wet.
- d) If the leaves yellow or go brown from the centre stem and plants rot, it may indicate over watering. These effects can also be caused by little critters in the potting mix eating the underground part of the orchid.
- e) The leaves turn a slightly bluish green if the plants are too dry.
- f) Watch for the pot that remains wetter and is not ready for watering.

Watering during dormancy. Watering while the plant is dormant gives the tuber enough moisture so it does not dehydrate, but not so much that it rots. Give the pot a light watering, so that the water penetrates a maximum of about 1cm into the mix, perhaps each two to three weeks or, in very hot weather each week. Keeping the pot cool will also assist.

Watering out from dormancy. The purpose is to provide moisture to the plants as they come out of dormancy and produce a shoot.

- a) as the potting mix is almost dry, there is a risk that the water will run across the potting mix and down the inside of the pot, leaving the potting media dry.
- b) There is also a risk that if the weather is very hot, the mixture will become wet, hot and humid, and the tubers will rot.
- c) a frequent temptation is the water too early in the year. This can be resisted and helped by understanding where the plant naturally resides (most orchid books give location areas), and hence when rain falls in the orchid's habitat.

There are three commonly used methods to wet the pots:

- ** Give the pots a good soaking with a rose attached to a hose. (rose is a hose nozzle)
- ** Dunk the pots into a bucket of water until the bubbles stop rising and the pot will sink.
- ** I prefer to lightly water the pots, as in a light rain shower, repeating over several days until you think the pots are damp well down.
- ** With all methods, lift the pots a few days after watering - light pots may be water repellent and need special watering care, heavy pots may be too wet and need to be allowed to dry out a little before receiving more water. If the pots are light in weight I add water slowly into the centre region of the pot until the water soaks in.

Watering into dormancy. When the plant leaves start to yellow and take their nutrient back into the new tuber, it is important to reduce the amount and frequency of watering. As this is normally a hot time of year, the new tubers can rot if the potting mix remains too damp / wet. Early yellowing of plant leaves can also indicate other problems such as a lack of nutrient.

How much water is enough water? The most difficult question, but hopefully the following will help develop an understanding.

- *** It is a requirement that terrestrial orchid plants have "air space" around their "roots".
 - *** *The Caladenia* complex, Swan Greenhoods and *rufa* type *Pterostylis* collect most of their nutrient from near surface. Thus keeping this area of the potting mix at a good moisture level, without having the tuber area too wet is a challenge, which is partially overcome by using a more open mix (more air space in the potting mix).
 - *** The cauline *Preivstyis* have similar but not so extreme needs.
 - *** Thus, being careful to not over-water the media, with all of these above groups, is important.
- Acianthus*. *Corybas*. *Pterostylis*; and *Thelymitra* have roots mainly near the surface, but most accept a higher level of moisture and a lower level of air space in the potting mix.
- Diuris* are different in that they have surface roots and roots that travel below the tuber. Thus a more even level of moisture is required down through the potting mix.

Chiloglottis have roots in the zone between the tuber and the surface, and often have long runners to the new tuber which run down or around the outer pot. The summer flowering and *valida* group *Chiloglottis* need to be kept damp while dormant.

How to actually water.

- *** Water should be applied without disturbing the soil surface, and early in the day so that leaves are dry by evening
- *** I find that a hose rose pointing down causes too much soil surface disturbance and tends to flood water over the side of the pot..I also find it more difficult to determine how much water I have applied.
- ***With the hose rose pointing up the water falls more gently. This seems to leave the pot soil surface undisturbed, and this method also allows you to observe the water going into the pot and better judge when enough water is applied.
- ***My preference is to water from a watering can that has a fine rose. The soil's surface is not disturbed and I can observe how the water is soaking into the media of the pot. I can also add fertiliser to the watering can. It takes a little longer to water my collection, but the results are better. Water quality seems to be important. Most town water-supplies are treated and of about neutral pH, but if you are worried about the quality of your water, then tank water may be a better alternative.

Seedlings Terrestrial seedlings require special watering care as often they are within the top centimetre of potting mix. I water lightly and frequently, in warm times - this may be daily or twice a day.

Benching Results October Meeting 17/10/2013.

Dendrobium Species	Den torressae	G. Knight
	Den lichenastrum	R. Morrison
Dendrobium Hybrid	nil	
Sarcanthinae Species	S. hartmannii	J. English
	S. hartmannii	J. English
Sarcanthinae Hybrid	S. Judith x (Heidi x Dave)	J. English
	S. Yvette x Melody	G. Steenbeeke
Bulbophyllum	B. globuliforme	R. Hanman
	B. schillerianum	R. Morrison
Aust. Species Other	Dock. Striolata	W. & M. Southwell
	Aust. Hybrid Other	nil
Terrestrial Pterostylis	nil	
Caladenia Species	nil	
Terrestrial Evergreen	Phaius australis	R. Morrison
Diuris Species	nil	
Terrestrial Hybrid	Diuris Mule	W. & M. Southwell
Terrestrial Other	Microtis parriflora	R. Morrison
Australasian Species	nil	
Australasian Hybrid	nil	
Novelty Class (50% or more)	nil	
Seedling First Flowering	S. Elegance x Hot Ice	K. Hines
	S. Maria	R. Morrison
Growing Competition 1	nil	

Plant of the night is Sarc. Hartmannii grown by John English. Congratulations

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From the October Sarcophilus Show 2013..

Grand Champion	Peter Gibson	Sarco George Colthup 'Bill'
Reserve Champion	Ian Lawson	Sarco. Judith'Yvonne' x Peace 'Mulberry'
Champion Sarcanthinae Species	Peter Gibson	Sarco. Hartmannii 'Kevin'
Champion Sarcanthinae Hybrid	Peter Gibson	Sarco. George Colthup 'Bill'
Champion Any Other Orchid	Ross Morrison	microtis Sp.
Champion Specimen Orchid	Peter Wise	Cymbidium madidum var Leroyiil

Congratulations to all!

GOOD GROWING

A little extra for emailers...the last article in this series

NUTRITIONAL SUPPORT FOR TERRESTRIAL ORCHIDS

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Plant nutrition is an important aspect of cultivation, and understanding where the nutrients come from, and how they are taken in, is the first step towards ensuring healthy growth. Now, while a good deal of emphasis' is placed on the value of fertilising, 96% of the essential elements found in plant material comprise carbon (45%), oxygen (45%) and hydrogen (6%). These are the major elements which come from the atmosphere and water ... so, providing your plants receive water, they have

most of what they need! The remaining four percent consists of the macro (NPK), micro and trace elements, which are found in water, soil and decaying organic matter... and of course various forms of fertiliser.

To be absorbed, the macro, micro and trace elements need to be in solution. Most are then taken in by the roots as ions (electrically charged particles), thanks to the process of respiration which oxidises the sugars from photosynthesis, thus releasing the energy for this to happen. Now for photosynthesis to occur, the orchid needs foliage, so pre-emergence growth (which may take a month or more) is drawing on the starch reserves in the tuber, and may also be aided by mycorrhizal support. Once the orchid has foliage, and for growth to continue, the amount of plant sugars produced by photosynthesis, must be greater than that used by respiration over a 24 hour period.

Simple! However, there is catch. All this is temperature related, decreasing markedly below 15°C. In Melbourne, this narrows the window for additional fertilising for the majority of species, to the post emergence period, up until the weather cools in late autumn. As for the spring period of warmer weather, the orchids that emerged in autumn and winter are no longer in a growth phase. Tuber replacement occurred earlier in the growth cycle, while flowering is simply the final act before the current season's plant dies. This largely draws on the remaining food reserves of the old tuber and those in the foliage, so fertilising at this time is of little value, as little will be absorbed.

Terrestrial orchids also receive nutritional support from mycorrhizal fungi, which 'ebbs and flows' at various stages and varies in dependency from species to species. For this support, the fungi require access to a carbon food source such as decaying leaf mould and wood chips or shavings. Once incorporated in the potting mix, the organic material continues to be broken-down by bacteria and fungi, while the orchid gains nutritional benefits through the digestion of fungal hyphae coils within the plant called "pelotons". If the mycorrhizal association is lost, the orchid will ultimately decline.

For all this to work, the organics (wood chips or shavings and leaf mould) must be well composted to prevent nitrogen drawdown. This occurs when microbial activity takes nitrogen from other sources (the orchid) to breakdown poorly composted material, resulting in yellowing plants. Here, the addition of a little blood and bone (dessertspoon per 9 litres of mix) when making the potting mix helps buffer any marginal material. And don't forget, it's the fine friable material of your composted organics that represents humus, which holds a bounty of nutrients! So, it's important to include all the various grades of organic material in the mix, for the fungi and the orchid. If natural soil is a component of your mix (this isn't essential), the nutrients it contains become available from the fine silt it produces, and the organic material. The potting mix also influences the uptake of various elements due to its pH, and providing the recommended guidelines are followed (typically pH 5.5 to 6.5), there should be little problem.

However, if deficiency symptoms suddenly appear within a pot, check the potting mix pH before you take any other action and re-pot if necessary.

Potting mix microbial activity can also be stimulated by the use of seaweed solutions. These products are not fertilisers in the strict sense, rather tonics. They also aid in strengthening certain aspects of plant structure, and offer stress relief for plants repotted during growth. The two most popular brands are low in phosphorous, and can be used year round. When we put all this together, keeping the potting mix biologically active becomes a key to providing nutrition to the orchid, so have no doubt that it's a healthy potting mix leads to healthy plants!

As for fertilisers, they are available in two distinct forms, organic and artificial. Organic compounds such as blood and bone, humus and aged manures (from naturally grazed animals) tend to have low element concentrations, but this makes them relatively safe to use without fear of overfeeding. You see, plants can't readily control how much they absorb, or decide if an element is good or bad for them. If it's there, they'll take it, which can have dire consequences, given that mycorrhizal fungi and terrestrial orchids are rather sensitive to phosphorous and salt levels. Even with the organic forms mentioned, some will need diluting at 10:1 or more if you steep solids to make a 'tea', while some bags of blood and bone can be rather high in phosphorous (it should be around 1.5% or less), so

check the labels before you buy! If you have a worm farm, don't use the liquid from it on your terrestrial orchids, as this also has high phosphorous levels. Artificial fertilisers (with the exception of those formulated specifically for native plants) tend towards higher phosphorous and salt levels. Those formulated for orchids, are targeting epiphytic plants, not Orchidoid terrestrials, so they too are generally unsuitable again, check the phosphorous level).

Now, given that the macro, micro and trace elements need to be dissolved in a solution to be of use by the plant, liquid applications are the most efficient way of applying fertiliser. As for slow release pellets, they require relatively high moisture levels to breakdown effectively, which doesn't suit the generally meagre watering regime of terrestrial orchids. Neither does the slow release action, given the relatively short active growth period before the weather cools. This is mentioned primarily for those using native polling mix as a base for their mix. This contains slow release pellets of native fertiliser, and while they won't hurt, they are unlikely to do much either!

If you wish to try a supplementary fertilising programme, focus on terrestrial species with good rates of tuber multiplication. Be very cautious with solitary species, which typically have a strong fungal dependency and those that prove fickle at the best of times. Use a liquid fertiliser (ideally organic) with a half strength fortnightly spray application (water pots first!, from emergence until the weather cools, at which time stop).

You could also alternate with applications of seaweed solutions, or just try this alone, even over the cooler periods. Evergreen species of *Cryptostylis* could be given a supplementary feed whenever new foliage appears, while *Spiranthes australis* can be fed from spring until flowering and, again, when the new foliage appears in late summer to autumn. And for those wondering why spray applications are recommended after watering; any plant should be well hydrated before you fertilise. It's also an easy way to apply a controlled amount, with less waste running out the drainage holes! As for foliar feeding....most finishes up round the root zone where it is taken in far more efficiently by the roots, rather than the foliage.

Ultimately, it will be up to you to judge the benefits.

Good Growing all!