

The following articles were published in ANOS VICTORIA Bulletin in October 2013.

I have had this article for some time and hopefully I haven't printed them prior to this issue. These came with photographic material, but unfortunately, my scanner doesn't exactly flatter the photos.

HOUSING TERRESTRIAL ORCHIDS

Written & presented by Peter Krake

The Society's book, *The Cultivation of Australian Native Orchids*, is an excellent reference on all aspects of housing and successfully growing our native, terrestrial orchids. If you did no more than follow the suggestions in APPENDIX 1: CONSTRUCTION OF A SHADE HOUSE FOR EPIPHYTIC OR TERRESTRIAL ORCHIDS, you would end up with a very well-designed shadehouse.

Members who grow terrestrial orchids all do it differently. Important factors such as the space available; the size of your collection; your budget and just how keen you are, all influence how we house our terrestrial orchids. Shadehouses can range from a bit of shadecloth draped over a simple wire frame to elaborate, purpose-built structures with ample room for the collection to expand.

What are we all trying to achieve when we build a shadehouse?

A shadehouse allows us to:

- * Easily check and observe our plants.
- * Provide microclimates for different species.
- * Alter and/or partially control variables such as water (rainfall), temperature (shading and frosts), air movement (wind and air circulation), access, pests (mostly birds but also cats, dogs, frogs, rabbits, wombats, children.... etc).

Ideally, when you decide to build your shadehouse, you would start with a clean site or plenty of space to build the ideal house for your terrestrial collection.

I would like to share one man's story on how he went about doing exactly that. Mr brother Graeme, and his wife, Denise, moved to a bush property close to Bega in New South Wales and there was an obvious need for a new, purpose-built shadehouse. Here is a list of some of his considerations and solutions to possible problems when he built his new shadehouse.

- * north facing to make the best use of available light
- * pitched roof
- * treated pine frame and building materials
- * walls were 50% shadecloth (this was doubled after one growing season)
- * the roofing material was opaline, polycarbonate sheeting
- * a solid, south wall to provide protection from prevailing winds
- * positioning on the property to avoid shading from trees, buildings and ridge lines
- * provision for additional storage outside to reduce clutter inside
- * benches were 800 mm high and 800 mm deep
- * a weldmesh (40 mm x 60 mm) top to the benches to allow drainage and air movement
- * gravel flooring to control weeds and pests. * Storage bins under the central benches
- * additional 70% shading can be put in place over summer
- * pest strips help reduce insect problems.

Also

- * plenty of additional space for more orchids
- * solid panels to bench height help to exclude rabbits and wombats but not rats
- * western access door in similar materials to the walls
- * Diuris, rufa group Pterostylis and Thelymitra are positioned on the sunny, northern side
- * Pterostylis are positioned on the western side
- * Corybas are positioned on the protected, southern side.

Graeme continues to modify the growing conditions inside his shadehouse to find the best possible combination of variables that will give him the best results.

The reality is that most of us do not have a clean site on which to build our dream shadehouse. What we end up with has to fit the available space and our budget. However, every shadehouse, no matter what it looks like,

should be designed to improve our chances of growing terrestrial orchids successfully. Occasionally, there will be some orchids that just do not like the conditions in your shadehouse. We grow a few terrestrial orchids inside permanently while a few are brought inside to protect them from frosts over winter. (As stated, pictures accompanied this article in black and white)

TERRESTRIAL ORCHID MIXES

Written and presented by Helen Richards

What is the role of the terrestrial mix? It must provide nutrients, water and air (oxygen) and support the plants.

Australian terrestrials grow in conjunction with mycorrhizal fungi which provide nutrients to the plant and which are essential to germinate the seed. Our terrestrials, with their fungi, have evolved in low nutrient soils especially low in phosphorus, so this must be kept in mind when preparing a mix.

In the first book on cultivation of orchids in Melbourne put out by ANOS Vic for members, written around 1970, David Jones recommended that a basic mixture should be made from equal parts of bush loam, leaf mould and coarse river sand. After Rick Datodi and I joined the Society in 1974, we experimented further and, in consultation with Mark Clements and many Victorian growers, eventually came up with a basic mix which was intended to be used as a starting point and varied appropriately according to species being grown.

We believed that the ingredients could be sourced anywhere in Australia; or the world for that matter:

- * 1 part leaf mould - partially broken down leaf litter - quick release food source for orchids and fungi
- * 1 part buzzer chips or wood shavings - organic matter which is more slowly broken down and aids in drainage because of its firmer structure. Note, not western red cedar (resins), chipboard (glue), treated pine (arsenic). The buzzer chips must be kept damp for at least six weeks to destroy phytotoxins present before use.
- * 1 part loam - a finer material containing necessary nutrients and retains moisture.
- * 2 parts coarse sand (propagating sand) approx. 2-4mm to enable the above to drain well.
- * To this mix is added about 1 dessertspoonful of Blood and Bone per 9 litre bucket to replace nitrogen used up initially as the micro-organisms multiply quickly during the initial break-down process. In practice, I add the Blood and Bone to the leaf mould in about November, prior to repotting in late December when I have to break the leaves up with a whipper snipper and dampen them down because I have forgotten to gather them and break them down earlier. The buzzer chips need the fines sieved out (4 mm sieve) and be dampened down also in November, and I add the Blood and Bone to them at that stage also. It aids in the break down process.

I find that most species grow in that mix, but add extra leaf mould for the *Corybas* alliance and more sand for the *Caladenia* group and drier growing species.

Source of ingredients; Leaf mould - gather from under gum trees, buzzer chips from joinery factories.

Loam - I can still gather some from our farm, or check out the nurseries. Propagating sand is still available from some garden supplies. Mine comes from Spotswood potting mixes, 6 King St, Yarra Glen, and you can buy it by the bag or cubic metre for a very reasonable price. Small bags are also available from Mitre 10 or Bunnings.

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!)

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?

- * If the water pools on the top of the pot it usually indicates a problem- a dry or over compacted mix
- * 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
- * If the pot is very heavy in comparison to other pots then it is most probably too wet
- * 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
- * The leaves turn a slightly bluish green if the plants are too dry
- * 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 the water penetrates a maximum of about 1 cm 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.

- * 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
- * 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
- * A frequent temptation is to 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
- * 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 “airspace” 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 Pterostylis 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 pointing down causes too much soil surface disturbance and tends to flood 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.

(note: Again this article came with photos in black and white)(There was an additional article, again on Terrestrial orchids “Nutritional Support for Terrestrial Orchids by Richard Austin” that I was about to add to this newsletter but it is protected by copywrite. I will send off an email to see if I can print it later.

Benching Results JANUARY Meeting 21/1/2016.

Dendrobium Species	Den. Wasselli	J. English
	Den. Lichenostrum	R. Morrison
Dendrobium Hybrid	D. Pinterry	R. Morrison
Sarcanthinae Species	Sarc. Hirticalcar	I. Lawson
	Sarc. Eriochilus	G. Steenbeeke
Sarcanthinae Hybrid	Sarc Riverdene	D. Roberts
	Sarc. Riverdene (Velvet x ?)	I. Lawson
Bulbophyllum	nil	
Aust. Species Other	Cestichis coelogyoides	G. Steenbeeke
	Cestichis coelogyoides	G. Steenbeeke
Aust. Hybrid Other	Cym. Little Black Sambo	W. & M. Southwell
Terrestrial Pterostylis	Nil	
Terrestrial Evergreen	Calanthe triplicata	G. Steenbeeke
	Spiranthes australis	R. Morrison
Dockrillia	Nil	
Terrestrial Hybrid	nil	
Terrestrial Other	Geneplesium fimidictatum	G. Steenbeeke
	Eriochilus cucullaterr ?	G. Steenbeeke
Caladenia Species	nil	
Australasian Species	nil	
Australasian Hybrid	nil	
Seedling		
Seedling First Flowering	nil	
Growing Competition 1.		R. Morrison
Growing Competition 2.	nil	

Plant of the night was Sarc. Riverdene and the
Popular Choice was Cymbidium Little Black Sambo grown by Wal and Margaret Southwell.

Congratulations