

## SARCOCHILUS WITHOUT THE BULLSHIT!

© K Western October 2018

Numerous events since about 1986 have indicated to me that the widely preached ideas and beliefs of the time and that we had inherited from the past about orchid culture were at least somewhat faulty if not downright stupid.

In 1986, I bought a *Disa* flask and applied the then traditional practices of very high humidity in an enclosed system, low light and no fertilizer. The result was a rotted, moldy mass of seedlings all dead within a fortnight.

I bought another flask of *Disas* and did the same thing. Even darker conditions and not opening the enclosed system saw them all moldy and dead in even shorter time.

I decided to have one more go but figured by now that the current recommendations for deflasking at the time were rubbish and the last lot were deflasked and put straight outside, fertilized and put in good indirect light and they all survived. Stupidly, at the time, I only applied what I had learned to the *Disas* and still used low light, high humidity, no fertilizer on other genera which, I now know, were tough enough to survive this stupidity. That is, they survived despite terrible practices and not because of them.

In the late 1990's I gave some small *Den kingianum* plants to Peter McCauley. By chance, Helen & I visited him some weeks later when Peter told me to take a look at the *kingianums* and I couldn't see them. That's because he'd stood the pots in dishes of water and it was summer time and they had grown so much as to be unrecognizable and they were potted in a very coarse bark mix. That was theoretically over-watering to the extreme but there they were – absolutely more vigorous and robust than if they had been grown any other way. I could see there were some myths about over watering and growing media to be understood and dealt with.

I heard another classic over the past weekend where it was stated that only the new growing tip of orchid roots could absorb water and nutrient. Rubbish! If that were so, we would see the roots make immediate side shoots and new growing tips or else they'd starve. Unfortunately, this and similar stupid ideas are promulgated by good growers who misinform naïve newbies or other growers. That was just one of several statements uttered that I disagreed with.

Historically the first registrations of *Sarcochilus* hybrids were made in 1968 by Ira Butler in New South Wales.

This was quite a feat in those days because he did not have tissue culture skills, nor did he have access to them. He made his hybrid crosses, waited for pods he'd made to ripen, collected seed and sowed it, I believe in pots of cymbidiums and held his breath.

Effectively, unlike today where we use tissue culture techniques and generally get almost every seed from a pod to germinate, Ira would have only gotten the odd to a few seedlings from any cross and it would have taken quite a time to get them to flowering size. Since he registered the crosses beginning in 1968, he'd obviously had to make them well before that to be able to flower and register the hybrid crossings.

From the above, I conclude that until about 1960 or thereabouts, the only *Sarcochilus* orchids that existed were in the bush where they had evolved and grown for all time and that the only orchids that existed in people's collection were bush collected. That is all were species. No doubt, at times in the bush, there were hybrids made accidentally by pollinators or by other natural chance events. 1968 was the first time we can say for sure that there were hybrid *Sarcochilus* in existence.

*Sarcochilus* are native to the east coast of Australian and to Tasmania. There are about 25 species recognized and the number has grown recently with the splitting off of *S. minutiflos* again.

The easiest species to grow for hobbyists generally are *Sarcochilus hartmannii* and *S. fitzgeraldii*. From their physical appearance and flowering time and flower shape and nature, it can be seen that they are closely related. Also the environment that they are adapted to naturally live on can be matched by pot culture using solely or in simple or complex admixture, a range of different potting materials from suitable size pine bark, to Perlite and similar to cut up tree fern fibre to rice hulls to sphagnum moss and they will grow on rocks, rubble or on various types of natural and / or artificial mounts.

The earliest hybrid *Sarcochilus* were made from crossing those easy to grow or most locally abundant species and included *Sarcochilus hartmannii*, *fitzgeraldii*, *olivaceus* and *ceciliae*. The less abundant and more difficult to maintain species were logically unlikely to make their way into hybrids until general growing / maintaining skill levels increased. For a long time, the only hybrids made were primary hybrids between two different species, but ultimately more and more complex hybrids were generated, and they are escalating in variety, size showiness and hardiness every year.

*THE BULLSHIT: –*

#### **HUMIDITY –**

You'll get speakers who talk of seeing *Sarcochilus* species orchids in the wild – and they have. The problem is that they think we've got a hope of reliably and continuously reproducing those sheltered and humid conditions in a suburban Adelaide back yard and I would contend that generally speaking, we can't. It is possible to provide climate-controlled environments that are heated and / or cooled and equipped with evaporative coolers, misters etc but, given how widely the *Sarcochilus* are now grown, the average hobbyist can do quite well enough with the shelter provided by just a shade house and by virtue of the enclosing effect of neighborhood, gardens fences, houses etc. Don't fool yourself though, In Adelaide, Perth, Melbourne etc, we don't get anything like the general ambient humidity of the east coast on a typical day.

*Sarcochilus* grow naturally where they do because there's a balance between the delivery of a suitable amount of reliable moisture in the form of rainfall and or dew and those unavoidable moisture losses due to sun, heat and wind. The fact that *Sarcochilus* are often found in gullies and cooler, shady places is logical because the relative stillness of the gullies and the humidity that is quite natural to the Australian east coast and that humidity which comes from the surrounding bushland and undergrowth, reduces the drying effects of summer in those gullies and so they are far more likely to be hospitable than nearby more open bushland with a similar rainfall.

We can do all that by just giving our *Sarcochilus* regular waterings, by assuring that our potting medium does not rot their roots, so the roots are able to collect the water we apply. We can also help by providing extra layer of shade in really hot summers and by reducing wind movement by the location and provision of shade houses. It is not possible in back yard shade house on stinking hot 45°C day, 4% or less Relative Humidity with a howling north wind to maintain anything but a semblance of humidity. Unless someone can show me data from two matched humidity meters on the same day; one in amongst the orchids and one outside the shade house or growing area that they have somehow **both produced and maintained extra and effective humidity** then I reckon it's bullshit to think it worth the time to go about trying and its BS to think we have actually achieved anything unless we can meter the growing area and the nearby unmodified area to prove that anything has been achieved. Frequent watering is the trick. Retirees by hand watering (it's good for me too) and the workers by sprinklers/misters on timers or thermostats or similar.

Air movement is a must but here in sunny Adelaide we get plenty of it and in fact, too much movement has a drying effect. Eg, if you want your clothes to dry quickly after washing them, a low humidity, windy day really does the trick. Our orchids benefit somewhat from air movement even in summer, I believe, because the air flow over the plants takes heat from sunlight away from the plants. It seems that some of the local carnivorous plant fraternity put a wind reducing layer of cloth around their shade houses during summer to keep air flow to a better level to reduce its drying effects. I've considered it but haven't lately been pushed by stressed plants to implement any such measures so far, but a really bad summer may just push me to try that some time.

My shade houses are on the top of a hill where it's always breezy but it seems the 75% shade cloth walls are enough to limit the drying effect of wind to a suitable level.

Again, I combat the drying effects of my otherwise inhospitable environment by watering frequently enough to avoid stressed plants.

### **POTTING MIXES: –**

This is another area of absolute BS. The 'Mixes' range from pure pine bark to pure coconut fibre or chips to pure perlite to pure sphagnum moss to pure shell grit or canunda shell to pure rice hulls to pure charcoal to road gravel to weird az collections of all or any of the above without any testing to see benefits or improvements of such admixtures.

Unfortunately, we probably all started growing green plants in the form of camellias, rhododendrons, azaleas, African violets etc where, if you let the roots die out, the roots would die and so would the plant. Now the first orchid growers also started off growing typical pot plants whose roots should never dry out and that's how they treated their first orchids too whether the orchid roots needed to be wet all the time or not. They developed cultural and care conditions that worked to keep their plants alive and their philosophies and practices have been handed down to us today without question and I think they often got it quite wrong but its still possible to grow a range of orchids in Adelaide and suburbs despite practices and understanding that could be greatly improved.

We grow *Cymbidiums*, *Dendrobiums*, *Cattleya* alliance, *Miltonia* alliance, *Zygo* alliance, *Paphs*, *Sarc* and a few others because they will tolerate our errors or may even be more or less happy with them. In the wild, *Cymbidiums* grow with their roots deep inside the rotting heartwood of large trees such as eucalypts. The root area is also usually infested with ants whose burrows keep a supply of fresh, oxygenated air in the region so *Cymbidium* roots like to be moist and well aerated and so they do well enough in our pot culture where we use mixes to maintain some moisture and that are open enough to keep good oxygen levels at the roots. In time, or if the mix is fine and prone to rot, the growing medium decays, becomes acidic and kills or damages the roots and the plant suffers and dies or refuses to flower well. We know it's time to repot and generally keep too many dead or dying roots and put it back in equally rot-prone mix and repeat the process all over again.

Because that too fine and retentive medium is more likely to rot if kept wet, we get told to only water the plant every so often and, by my reckoning, our plants tend to be kept too dry especially during summer. I once used to water just once a week in midsummer because that was what I was perpetually told. Even my wife could see they were far too dry, so she set up sprinklers and the orchids bolted with the extra waterings. I think too fine or water retentive mixes that are automatically prone to rot are BS and that much coarser, non-retentive medium is far better and better also because you can water frequently – even twice a day or far more and plants do far better.

I was watering twice daily in a recent summer but found that when I came to divide a plant one evening, despite twice daily watering, the pine bark and roots were actually bone dry! I'd heard of Victorian growers standing their orchid pots in dishes of water/fertilizer over summer so I bought a heap of cheap plastic plates/dishes and stood my orchid pots in them and BINGO – the plants just greened up and bolted despite the heat. My bark mix at the time was too fine and water retentive and it started to decay but the

plants were superb, so I decided to just use very coarse pine bark alone and bigger pots so that summer soaking would not be a problem and the *Cymbidiums* did infinitely better.

On the other hand, unlike *Cymbidiums*, the *Cattleya* alliance, dendrobium alliance, *Miltonia* alliance, *Vanda* alliance, *Sarcochilus* etc can be grown well enough in pots with regular repotting to replace medium that has broken down over time with fresh medium. You will note though, that in most instances, by the time a repot is needed, there are a vast number of absolutely perfect roots that are growing in the air and away from the pot. Despite that, we can't wait to split the plant up and put it back – new roots and all – into a medium that is too fine, too water retentive and that's just going to break down all over again and so on. All this despite the fact that the roots have proven themselves to be able to thrive in the local lousy, non-humid air. Those roots are just like blotting paper and catch every drop of water, fertilizer, dew or drizzle and transport it to the root proper inside and thence to the plant. Note that the plants have thick leaves and bulbs etc to store water and reduce water loss.

I've found my plants like these are doing far better in much larger pots of much coarser bark that can be watered and fertilized far more regularly without promoting excessive rotting of the potting medium and the plants don't show signs of moisture stress.

Recently, I looked for an option to grow deflasked seedlings of a *Sarcochilus* cross that was genetically  $\frac{3}{4}$  *Sarc falcatus*. Now *S falcatus* definitely would die if I potted it in even coarse pine bark. Somehow I came upon the Clay Balls the hydroponics folks were using to grow their crops. The expected touchy hybrid was deflasked into it. The roots survived, and the plants are still doing quite well. It worked on the hybrids so why not try a few *S falcatus* in it? Yep – that worked too. What about the *Sarcochilus ceciliae* group of species – difficult to grow except on mounts. People shy away from mounts, but they'll buy a potted orchid – Yep that worked too. Now what about those pesky *Sarc hirticalcar* hybrids – as soon as the sphagnum moss or bark mix starts to rot, the roots start to rot, and a good breeding plant just goes backwards – Yep the clay balls work here too. Anyway I've now started repotting many a *Sarcochilus* into clay balls and they look great and I expect the roots won't rot with time and I expect I can just pot on instead of repotting and so that may offset the cost of clay balls. There's nothing wrong with good, clean coarse pine bark though too in my opinion.

## Mounted Plants

It is generally considered impossible to grow plants on mounts in shade houses etc in suburban Adelaide. I was caught up in that belief and had never given it a try.

I'd bought a mother flask of *Sarcochilus weinthalii* in about 2007-8 and had replated them into flasks of 8-12 plants to sell and they sold very well.

Attempts to pot a few up and grow them myself were a dismal failure.

Having heard that I might still have some of them left, Kris Kopicki turned up at my lab one day and I ended up giving him a few as I'd heard he was an exceptionally capable grower. If they survived and flowered for him all I wanted in exchange was a seed pod. The rest is history. He had them attach to his mounts with new roots in just weeks and then they made flower spikes and flowered. I was rewarded with about 7 pods but more significantly I could learn from an accomplished grower just what was needed for me to be able to grow orchids and especially *Sarcochilus* on mounts. His philosophy was that you can't over-water a mount – not perfectly true but close enough. You can keep *Sarcochilus australis* too wet even on a mount but that is a real exception. *Sarc australis*, growing outdoors in a shade house however, died from rot after 2 weeks of wet fog.

It was that learning about growing plants on mounts that made me question the validity of the rest of our thoughts about potted orchid culture and it must be at least partly right as I am now successfully growing a much broader range of orchid genera than I ever would have.

## CLIMATE CONTROLLED CONDITIONS

As a hybridizer, I need to be able to grow the so call twig epiphytes. I need them because of the colours they have to offer, for the patterns of markings, spotting and/or blotching or other novel features such as flowering time, etc they may have to offer me.

The reason they are not commonly grown and thus available to be used in hybridizing is they are not easy to grow being very fussy just where they will grow in the bush too.

To assure their survival, and because they seem to demand to be grown on mounts or because they just don't like to get too hot, I've had to put evaporative coolers in the south end of an enclosed and well lighted area of a shed. The coolers are switched on or off by timers and additional misters are brought into play by a thermostat if temperatures climb in spite of the evaporative coolers. The aim is to keep the growing house cool enough but extra humidity is also supplied. The advantageous effects of the extra humidity are counteracted by the significant air movement that comes with coolers on full bore but it all works and I can maintain species as breeders that I think might not survive out in my shade houses.

## WATERING & FERTILISING

As far as I'm concerned, the two go hand in hand. Here's another area where profound BS abounds. These days I keep my fertilizer to between 250 and 500 ppm – metered!

Many years ago, a fertilizer formula was promoted to orchid club members and we all embraced it vigorously. Soon after I started using it there was a funny smell of putrefaction. On examination it was found that the potting mix and many orchid bulbs were rotting at an incredible rate, but it took a while for some of us to figure that it was the new fertilizer formula.

In hind sight, the concentration was just far too great – about 1200 ppm without the extra salts from Adelaide tap water and it was burning the roots and bulbs and promoting growth of *Erwinia* bacteria that were then able to rot the mix and destroy the plants.

Some growers found that by watering the pots thoroughly before fertilizing the rot problems were avoided. Nowadays I conclude that worked because it loaded the roots with tap water and the fertilizer just ran over them and away without undue harm. Crazy. To this day there are still proponents who argue that orchid plants must be watered before fertilizing when, in reality, using far more dilute fertilizer applied to dryish mix and roots is far more effective as it is taken up by the roots without harming them and the plant then gets the goodies and far less fertilizer will be wasted and end up in a water table somewhere.

I think the adage "Fertilise weakly weekly" is Ok but "Fertilise weakly and frequently" is far better. Combined with coarser medium or mounted plants the over-watering myth does not occur and the plants get frequent feeds. If you check your plants too, apart from the truly deciduous ones, you'll find they are making new shoots, flower buds or stems or some sort of growth virtually at all times of year so they need a feed at all time of the year in my opinion. I reckon they are making growth of some sort summer and winter; hot or cold.

**Fertilising** is another area of absolute BS

There are just a given number of essential macro, micro and trace elements that a plant must have access to and that's it. Fertilisers variously supply all, some or perhaps just a couple of those essentials and that's it. Your aim must be to supply suitably available, sufficient amounts of those essentials at suitable intervals for the plant to take them up and with the energy produced by sunlight and photosynthesis, metabolise, combine and construct all the substances they and we need for life.

They just need Macro Elements such as

- Potassium
- Phosphate
- Nitrogen
- Magnesium
- Calcium
- Sulphur ( usually as sulphate in fertilizers )

Micro Elements such as

- Iron

Trace Elements such as

- Copper
- Cobalt
- Molybdenum
- Manganese
- Boron
- Zinc
- Chloride

They also need Carbon – usually taken up as Carbon Dioxide from air or from pre-formed carbon compounds from previous plant or animal sources

Hydrogen and Oxygen which, combined, make water and hydrogen and oxygen can be available as pre-existing complex chemicals from previous plant or animal life.

Despite the hundreds of fertiliser options / brands you can buy or imagine – they all are only better or worse sources of those few essential substances

Keep it simple is the best option.

The seaweed extract products are probably good as they seem to promote root growth.

The Peters and Campbells fertilizers are also great but there's even BS here to as though they quote both Calcium and Magnesium as present they are only in miniscule quantities as unavoidable impurities and you must supply the Ca and Mg preferably as weak solutions as Mg Nitrate and Ca Nitrate which can be mixed together but not with other fertilizers as its likely insoluble precipitates will be made that takes the Calcium out of solution. I fertilise, alternating Campbells Diamon Range '19 Carat' fertilizer for 3-5 waterings with 1 watering of the 50/50 Ca/Mg nitrates (at a level teaspoonful per 10 litres) and the resultant growth has been very impressive.

In summary, I think our are virtually little *Vandas* with roots designed to grow attached to rocks or branches or twigs and that they are designed to catch and hold quite small water opportunities and they may benefit from drying out from time to time for periods of time.

I think coarser and less water retentive media are advantageous by enabling the roots to experience some drying as would occur in nature.

I think we are then able to water and fertilise far more often and that our plants grow better. I think we need to better understand what our preferred fertiliser's strengths and weaknesses are so that we can better supply their needs more simply, more effectively and at lower cost.

I think the regular watering, wind control and shade improvement to avoid drying stress is far more sensible than hoping to reproduce and sustain high humidity.

I hope we can better understand how to grow our *Sarcochilus* and other genera.