



Semi-Hydroponics Inverted

by Sue Bottom, sbottom15@hotmail.com

Want to keep your orchids happy? Make sure you always have plenty of air around the roots. You have heard a million times that more orchids have been killed by overwatering than any other cause. But, it is not overwatering that kills orchids, it's the fact that there is little air in a water logged potting mix. Similarly, when an organic potting mix ages and the organic matter starts to break down, orchids go into a sharp decline. Lack of sufficient air is the culprit, as the organic matter rots, it compresses and the plant suffocates.



Vandas roots crave fresh air and moisture

As long as there is plenty of air around the roots, it is almost impossible to overwater your orchids. The easiest way to provide air is to grow mounted or in baskets/pots with no potting media. Vandas and mounted orchids can be watered several times a day during the growing season. In fact, they want to be watered several times a day, and not everyone has that much spare time. For convenience, I grow in a pot using a media that will retain some water but still allow ample air around the roots. One of the most critical considerations in selecting a potting mix is the porosity, or pore space of the mix, which is a measure of the voids between particles that can be

occupied by air and water. The coarser and more irregular the surface area of the potting medium is, the greater the porosity. The larger the pot, the larger the chunks should be, although larger chunks can also be used in smaller pots if the watering frequency is increased.

Some orchid growers use the semi-hydroponic method, growing their plants in an inert media in plastic pots with holes drilled an inch or so from the bottom so there is a water reservoir. The theory is that the media allows water to wick up through the pot by capillary action to keep moisture levels relatively uniform while also being coarse enough to provide air around the roots. My potting technique is the exact opposite, where the air reservoir is at the bottom of the pot and the moisture is held in the upper portion of the pot. Chunks of Styrofoam are placed in the bottom third of the pot, then a little potting mix, the plant is situated in the pot with the roots are splayed out over the mix, the pot is backfilled with mix and then top dressed with some organic media.



Happy phalaenopsis roots



St. Augustine Orchid Society

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Cattleya roots smothered from lack of air in bottom of the pot; it wouldn't happen with Styrofoam.

Styrofoam. Styrofoam peanuts work fine, but I prefer Styrofoam chunks. You can retrieve lots of Styrofoam from your neighbor's discards on trash collection day. Leave the hard Styrofoam, but bring home the soft, easily broken up Styrofoam. You'll find many uses when you are repotting your orchids. When broken up into chunks, it can be used for drainage in the bottom of a pot. It can also be used as smaller chunks mixed in with the Sphagnum moss when potting orchids in large pots, say 6 inches and larger. The random chunks are distributed throughout the Sphagnum moss so the moss doesn't stay too wet too long. You can also run the Styrofoam through a sieve to mix together with Sphagnum moss.

Potting Media. The quality and availability of different orchid media has changed drastically over time. In years gone by, you could buy the most perfect cattleya potting media, coarse tree fern with redwood bark. This long lasting organic media had large pockets of air distributed throughout the pot and the cattleya roots loved it. Redwood bark is no longer available and good quality tree fern is almost impossible to find, so we substituted bark for the tree fern and added lots of sponge rock and clay pebbles along with some charcoal to increase the porosity of the mix. The organic matter serves to hold onto some nutrients for uptake by the plants as well as buffering moisture and pH levels. The inert clay pebbles, sponge rock and charcoal help to keep the mix open and retain a little moisture. This potting mix is about 30% bark, 30% coarse sponge rock, 30% clay pebbles and 10% charcoal.

Top Dressing. A thin layer of organic matter at the top of the pot will help protect the newly emerging roots from chewing pests and drying out. You can use Sphagnum Moss, and it doesn't have to be the really good stuff, Cypress Mulch, or even Pro-Mix although Pro-Mix will tend to wash into the pot and plug up some of the valuable pore spaces.

There are many different iterations on this theme to increase the air space inside the pot. Alan Koch of Gold Country Orchids uses a technique he calls collaring when planting small seedlings. He wraps the New Zealand Sphagnum tightly around the roots and pushes the root ball into a small pot, leaving an air space in the bottom third of the pot. The roots will ultimately grow into and fill in this air space. Club member Linda Stewart has her own technique in which she pots her little miniatures in high quality Sphagnum moss in a net pot, and then drops the net pot into a clay pot. This leaves an air space around the outside of the net pot that the roots quickly find and grow into.



Lots of root growth after collaring



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Cattleya mossiae growing in Venezuela, photo courtesy of Greg Allikas

Many of the orchids in cultivation are epiphytes that left the nutrient and moisture rich soil behind so they could harness more energy from the sun. They evolved to grow on branches in the tree canopy where their roots are bathed in air and absorb moisture and nutrients from rainfall and stemflow. The spongy velamen surrounding the root filament acts as an impermeable barrier preventing moisture loss when dry, changing almost instantly when there are dews and rain to absorbing

moisture and nutrients. There may be a thin layer of organic matter and debris that accumulate around the roots, which also supports ferns, mosses and other epiphytes. Our three layer potting scheme simulates nature. The Styrofoam in the bottom of the shallow pot acts similarly to the well drained tree branch, the potting media is the organic matter trapped around the epiphytic roots and the top dressing is the ferns and mosses.