



BASIC ORCHID GROWING in a NUTSHELL

A great many folks will give out advice about orchid growing, but they tend to tell you *WHAT* to do, rather than explaining *WHY* you should, which will help your understanding of the hobby. This document seeks to be a basic primer to help you grow your orchid better and more easily.

Orchids are the “Goldilocks” of the plant world, with each type having its own set of “just right” cultural conditions. Plants within a single genus often have similar requirements, but not always. There are some variations within the commonly grown genus, phalaenopsis, for example. A few of the species, such as bellina and venosa, like it hot, approaching triple digits and never getting cooler than the mid-70’s, while others, such as wilsonii and honghenensis, originate in locations that can reach freezing and rarely see temperatures above 75°.

Orchids are not particularly difficult to grow, but to be successful, one must understand exactly what the plant needs, so that those cultural parameters may be met. In the case of hybrids, it is usually acceptable to “average” the requirements of the species in their backgrounds.

Feeding and watering often confuses growers but can be greatly simplified. **Fertilizer is one of the least important aspects of orchid culture.** For any plant to add a pound of mass – a few weeks for corn in the middle of summer, several years for a phalaenopsis, or a lifetime for a tiny pleurothallis – it only needs to consume and process about 5 grams – about a teaspoon - of fertilizer, most of that being nitrogen. So, pick one with a complete formula and use it sparingly and regularly. In my 50+ years of orchid growing, I have found that applying a solution containing 75-125 ppm nitrogen per week is a great level to sustain growth and blooming. Fortunately, there is an easy way to estimate that: Simply divide 8 by the %N in the formula; the result is teaspoons/gallon for the middle of that range, giving you room to round up or down for measuring convenience.

For example, a 30-10-10 fertilizer would require $8/30=0.2667$, so one-quarter teaspoon per gallon is fine for weekly application. (If you prefer metric measures, change the numerator to 9.2 to get the results in ml/L.) If you feed every two weeks, double that numerator to 16. (Think of “ppm N” as being the plant equivalent of our dietary “calories” – fewer “meals” requires more “calories” per meal.)

Water is the true driving force for growth. To gain that same one pound of mass, in addition to the teaspoon of fertilizer, the plant must absorb and process about 25 gallons (200 pounds) of water. Plus, as plants can lose as much as 95% of their absorbed water through transpiration, that means the total water demand is more on the order of 500 gallons!

Good roots means good plants, but how to care for them can be confusing, as there seems to be as many options as there are growers. Let’s start by dispelling a few myths: ① **Water does not cause root rot**, ② **orchids do not need to dry out between waterings**, and ③ **there is no single potting medium that is perfect for any plant in any environment.**

Unlike terrestrial plants that do almost all their respiratory gas exchange processes through their leaves, orchids have evolved, presumably as a water retention strategy, to do much of that through their roots. That means **we must be careful to provide the roots with plenty of air in addition to water**, and that’s where the choice of potting medium comes into play.

For the most part, **orchids get no nutrition from the potting medium.** Instead, it provides the plants with mechanical stability and acts as temporary storage of water and nutrients. Let's look at what's going on in the pot when we water.

When we water an orchid, most of the solution just pours right through. Some is immediately absorbed by the plant and the potting medium, but it is a third fraction of that solution that is important to consider – that held in the voids between the particles of the potting mix.

If the voids in the mix are small, due to it being too tightly packed, becoming more and more dense as it ages, or if too fine of a mix is used in the first place, then the surface tension will be strong enough to fill them, preventing free airflow around the roots, leading to their suffocation and death. **It isn't the water that kills roots, it's the lousy potting medium!** (If you let that medium dry, those pathways reopen, which is probably where the myth that "orchids must dry out between watering" originated.) If, on the other hand, the potting mix used is sufficiently coarse, gravity overwhelms the surface tension and the larger void spaces drain, allowing the root system to "breathe" and stay healthy. THAT is where we must make a "judgement call" and do a bit of experimentation.

A coarse mix provides plenty of air, but holds less water and dries out rapidly, so requires frequent watering. A finer mix holds more water so can be watered less frequently but poses a potential root suffocation risk. Plus, you need to consider how the rest of your growing conditions affect that. High humidity slows evaporation, while higher temperatures, light levels and air movement accelerate it. **Your #1 task as a grower, is to find that "just right" balance to keep "Goldilocks" happy.**

That can be accomplished by selecting an "in between" grade of potting mix ingredients, by mixing a small amount of a high water-holding ingredient in with a coarser mix (bits of sphagnum in a coarser bark is often seen), or by using a plastic pot with only bottom drainage, rather than a highly perforated-, or clay container.

Think about what the plant needs, then think about how all the factors above play a role in achieving that, and put a "personal preference" layer on top – do you like to "mess with" your plants, or are you more of one to "admire from afar"? What does your schedule permit?

A word about changing potting media. At some point, you're going to have to repot the plant, whether that is because the container and medium it's in when you get it is inappropriate for your situation, the plant may have outgrown the current container, or because the potting mix has aged and is decomposing. Understand the following about roots:

As roots grow, they "tailor" themselves on a cellular level to function optimally in that environment, and once they have grown, they cannot change. If you move the plant into a different potting medium, you change the root environment and have immediately rendered the existing roots "sub-optimal", and they will begin to fail. How rapidly that happens is controlled by the extent of the differences between the old and new media. Therefore, **the best time to repot is just as new roots are emerging from the base of the plant.** The old roots will fade away, but the new ones will take over and support the plant.

Once you have settled on the "just right" container and potting mix for a plant, the best strategy is to replace that mix with the same material before it has aged significantly. That way, the "old" and "new" conditions will be so similar, the plant will experience little- to no repotting stress.

