

Healthy Roots, Happy Orchids

By Joe Francis, Fairfax Master Gardener

We master gardeners seldom field questions on orchid care, in spite of the fact that more people are trying to grow orchids than ever before. However, we do frequently hear these words – “I can’t raise orchids; I kill them” – and they are often said with embarrassment. What most people fail to understand is that the key to a thriving orchid is properly managing its root system. In other words, don’t overwater it, don’t underwater it, and repot the orchid regularly.

When we transplant or repot our plants, we place the existing root system into the soil (a terrestrial environment), where the main root structure sends out feeder roots to bring water and other nutrients into the plant. The vast majority of orchids have evolved over the millennia with an epiphytic root system, meaning they require air to move freely around their roots to grow healthily.

In their natural habitats, orchids grow suspended on tree branches, where they can get a fair shot at air, moisture and sunlight. The orchid root has an outer layer called valeum, which acts as a sponge and absorbs moisture from its surroundings.

Within the valeum, there is a solid, thin root that travels into the core of the plant’s rhizome system.

The valeum layer must remain healthy to insure that water and nutrients flow into the plant. If the valeum layer fails to dry out between doses of moisture, it will rot and break the cycle of transfer into the plant. That’s why overwatering will quickly kill an orchid. Under-watering also kills—it just takes longer.

As houseplants, most orchids are potted in clay or plastic containers. The clay pot, which is porous, acts as a conduit to draw moisture away from the root system. In this case, it is best to plant the orchid in a loose potting mixture of fir bark and large perlite particles so that it has the proper environment for the vital valeum drying process. A plastic container, on the other hand, retards the drying process, so root health must be maintained by less frequent watering. If the orchid plant is potted in absorbent sphagnum moss, root health management requires longer intervals between watering to allow the valeum to dry.



photo: by author

Phalaenopsis orchid showing healthy roots

photo: Michigan State University Extension



Orchid potting mix composed of fir bark, coarse peat, dust sphagnum moss, and perlite

In order to troubleshoot orchid problems properly, one must first determine if the plant in question is potted in sphagnum moss, fir bark with perlite, or some other open media, such as coral rock. The moss-grown plant should be repotted every two years to prevent the media from becoming sour — that is, too acidic — through microbial decomposition. The fir bark and perlite mix will tend to last an additional year, if the original potting ingredients were of good quality. If the medium breaks down, the air-drying effect will be impaired, and root death will quickly follow. With these potting media, it is better to repot a little too early than a little too late.

Plants grown in rock and charcoal mixes will rarely need to be repotted unless the plant grows out of the container. These mixes have superior drying capabilities so they require more frequent watering for plant health.

Young seedling orchid plants are generally potted in fir bark and perlite mixes of smaller particle size. These immature plants require more frequent watering because the smaller bark tends to dry more quickly. This frequency results in a shorter life span for the medium, and it must be watched carefully and replaced as early as month 12 or 13. Orchid plants, while juveniles, will be in smaller-sized pots that must be changed as the plants grow. For these plants, watering frequency must follow the drying cycle of the potting medium; water must be added before the medium is totally dry. In contrast, mature plants require the root system to be dry prior to watering.

A major segment of orchid plants have terrestrial, not epiphytic, root systems. Still, they also require air to move around their roots to allow for a healthy valeum root system. Orchids in the *Cymbidium* genus (a.k.a. boat orchids) are prime examples of this group.

Orchids in the *Cypripedium* genus (a.k.a. lady's slipper orchids) are also terrestrial. They are usually found growing in the loose-leaf coverings of forest floors. Their root systems have a light coating of hair follicles on the main feeder roots that gather the needed moisture and nutrients from their environment. These hardy orchids prefer loose, airy soil, but they do not like the soil to dry out completely.

In summary, the path to a healthy orchid begins at the roots; and growing media, containers and proper watering all play important parts in how well the roots sustain the orchid.



photo: by author

Cymbidium 'Solar Flare,' a compact orchid

A longtime master gardener, Joe Francis is also an award-winning orchid grower.