

Theme: Potting Orchids — Media and Methods

Adaptive Repotting Approach

An Element of Growing Healthy Orchids

BY MARY JO GILSDORF

FOR ME, THE PROCESS OF LEARNING how to grow orchids has been a process of adaptation. I began on a windowsill with a couple of plants that I fussed and mussed over until they met their untimely end. I then got more plants, too many to pay too much attention to, and they stayed alive. My next goal was to get them to grow and then to grow them well. Soon, I set my sights on making them bloom. And bloom bigger and better. Each progressive step in this process involved the creative use of materials and methods to enable my plants, my growing space and me to achieve my goals. From my windowsill to the light room I finally built in my basement, and some day to the greenhouse I hope to have, the process will continue.

Orchids exist virtually on every continent in every kind of climate. Orchid growers are equally ubiquitous. And as each species is unique, so are the conditions of each orchid grower. Windowsill hobbyists are faced with challenging conditions, and innovative ways to adapt to these less-than-ideal conditions develop. Repotting provides an excellent opportunity for learning, using potting media and containers to compensate for the growing conditions available, whether on a windowsill or in a greenhouse.

The purpose of a pot is to provide the basis of an environment for the horticultural needs of a particular plant in a particular place for a particular

owner. This adaptive repotting approach takes all of the components of this equation to create support for the plant in your environment. There is no one way or right way to do it. Literature is replete with advice, but unless that advice matches your conditions and the type of orchid you are growing, it can ensure the demise of the plant as easily as it can produce an award-winning result. Be flexible and responsive in your approach. Experiment with methods and materials. Observe and record your results. Adjust. Change. Evolve. And have some fun with it.

The two basic parameters to adapt for success in growing are what the plant needs to prosper and what you have to offer. Creative use of different containers and media bridge these baseline factors. Many resources are available for understanding the cultural habits of orchids. In considering your choices in potting, review the cultural information, paying particular attention to the moisture needs of the plant, that is, the level of humidity it requires to flourish, the rain cycles and amounts in the plant's natural habitat. Also consider the plant's characteristics. Is it an epiphyte, terrestrial or lithophyte? What type of plant structure does it have? Are there pseudobulbs to store water? Fleshy roots or thin brittle ones? Thick leaves or thin? All of these characteristics enable the plant to

adapt to its native environment. If you understand that adaptation, you can better modify your approach in repotting to provide what it needs to flourish for you.

Each grower varies in his or her ability to provide the factors for the healthy growth of any particular plant in the growing space. As creatures with a passion for growing orchids, we are known to cultivate them on windowsills, in greenhouses and light rooms or under several of these conditions, among others. What we have to offer in humidity levels and air

OPPOSITE *Paphiopedilum* Kolosand 'Helios', HCC/AOS (*kolopakingii* × *sanderianum*) takes after its *Paph. kolopakingii* parent in



movement varies widely through and within these growing spaces. We fuss over our plants, ignore them, water heavily or lightly or some combination thereof. We are diligent in our repotting or haphazard. We place them in pots or hang them. These habits are significant factors in the climate and environment we provide.

The adaptative repotting approach balances all of these factors with the materials at hand. With a little ingenuity, the number of different kinds of plants that you can support in your environment may expand beyond its more obvious means. By matching materials and conditions to one another, I can grow paphiopedilums and cattleyas, as well as calanthes and vandas, among other various genera spanning a variety of culture requirements in my 8 × 10-foot (2.4 × 3-m) basement light room. The types of containers and media are microclimates in and of themselves within the parameters of the growing conditions.

THE POTTING BENCH To approach repotting in practical terms, prepare your potting station. Most of us have a favorite place to work. I converted a work bench in my basement into my potting area. Collect your tools and potting materials. For tools:

- ◆ Several cutting and trimming tools: a box of razor blades, old kitchen knives, garden clippers, scissors. I have found Chinese scissors, which I found in a mail-order catalog, to be handy. They are ambidextrous, with large hand-holds, and are made of steel that easily sterilizes with a plumber's propane torch.

- ◆ A potting stick (though I prefer my thumbs). Trim and file fingernails before you begin to prevent injury to the plants as you repot.

- ◆ Rhizome clips, telephone wire, hairpins, paper clips, fishing line, string, panty hose, mesh bags and whatever else seems useful to secure the plants in or on their new containers.

- ◆ A handheld propane torch with a lighter.

- ◆ Several small buckets, plastic containers and bags for mixing custom potting materials and solutions.

- ◆ Fungicide, pesticide and growth or root hormone chemicals. Disinfectant such as RD-20® or Physan®. A popular and effective homemade formula for Bug Juice is comprised of one part water, one-half part alcohol, one-half part Formula 409® and a squirt of dish soap.

- ◆ Bleach and vinegar for cleaning pots.

- ◆ Newspaper.

- ◆ A notebook and pen.

- ◆ Non-oil-based hand cream. I prefer Silicone Glove® by Avon because it soaks in completely and allows you to wash off dirt easily through several hand washings. If it worked to keep printmaking inks from staining my hands, it will work with orchid-potting debris.

- ◆ Whatever else is handy for you to use. Your experience will expand your list as you fine tune your approach.

POTTING MEDIA Gather a variety of potting media. Some companies offer smaller quantities of hobby bags that provide the opportunity to try new materials without a large investment. A partial list of potting media that you may want to consider includes:

Medium Bark

Ingredients for Potting Media



Charcoal



Aliflor®



Tree Fern



Sphagnum Moss



Terrestrial Mix



Perlite



Fine Bark



Medium Bark



Coconut Husk Chips

PHOTOGRAPHS GREG ALLIKAS

and tree-fern pots and mounts. Cork slabs are generally sold by the pound. Look around for unusual containers during the year. Although a milk crate is not the most sophisticated of containers, I saw a mature *Zygopetalum mackayi* growing well in one. Not only did it support this large plant, the crate made it more convenient to transport the specimen to the show table. There is no limit to the materials or containers than your imagination and ingenuity can come up with to meet the needs of your plants, your environment and you.

THE POTTING PROCESS With the classic repotting method, there are a few standard steps. Remove the plant

from the old container. (If the plant resists, soaking it in water or even the handy tap of a hammer or clip of the scissors may do the trick.) Using your fingers, gently remove the old medium. With

Start with the plant and its moisture and water needs. Research the environment where the plant comes from and seek to mimic these conditions. This is not merely an exercise of recreating its native environment, but a creative use of the potting containers and media available to achieve supportive conditions within your particular growing space.

One of the best ways to start the process is to assess your growing conditions in relationship to the needs of the plant. Close scrutiny of the plant at hand will reveal all you need to know. Observe the condition of the roots when the plant is taken out of its current pot. Rotten roots indicate too much moisture, due either to the medium or your watering habits or both. Dry, shriveled, stunted roots point to the same factors, but indicate the opposite — not enough moisture — or it is not retained long enough or they are showing signs of low humidity in a still environment. Roots accumulated at the surface of the pot can indicate too dense a potting medium or too high humidity, while roots surrounding the circumference could be seeking cooler temperatures or higher humidity if it is a clay pot, or the need for greater air convection if the pot is made of plastic. Some plants grow better out of the pot instead of in it and these may be good candidates for mounting or even perching on a cluster of pots.

If the roots did not fare well due to excess moisture, consider adding more inorganic materials, such as Aliflor®, charcoal, perlite or combinations thereof, to your custom mix. If the medium is too dry, add some organic material, such as sphagnum moss, redwood bark or fiber. Try some plants of the same genus in plastic pots and some in clay. Mount a few if your conditions permit. Compare the differences in growth year to year. Approach your containers and potting media as a palette of colors. And if what you are using looks like it is working well, follow your notes from last year.

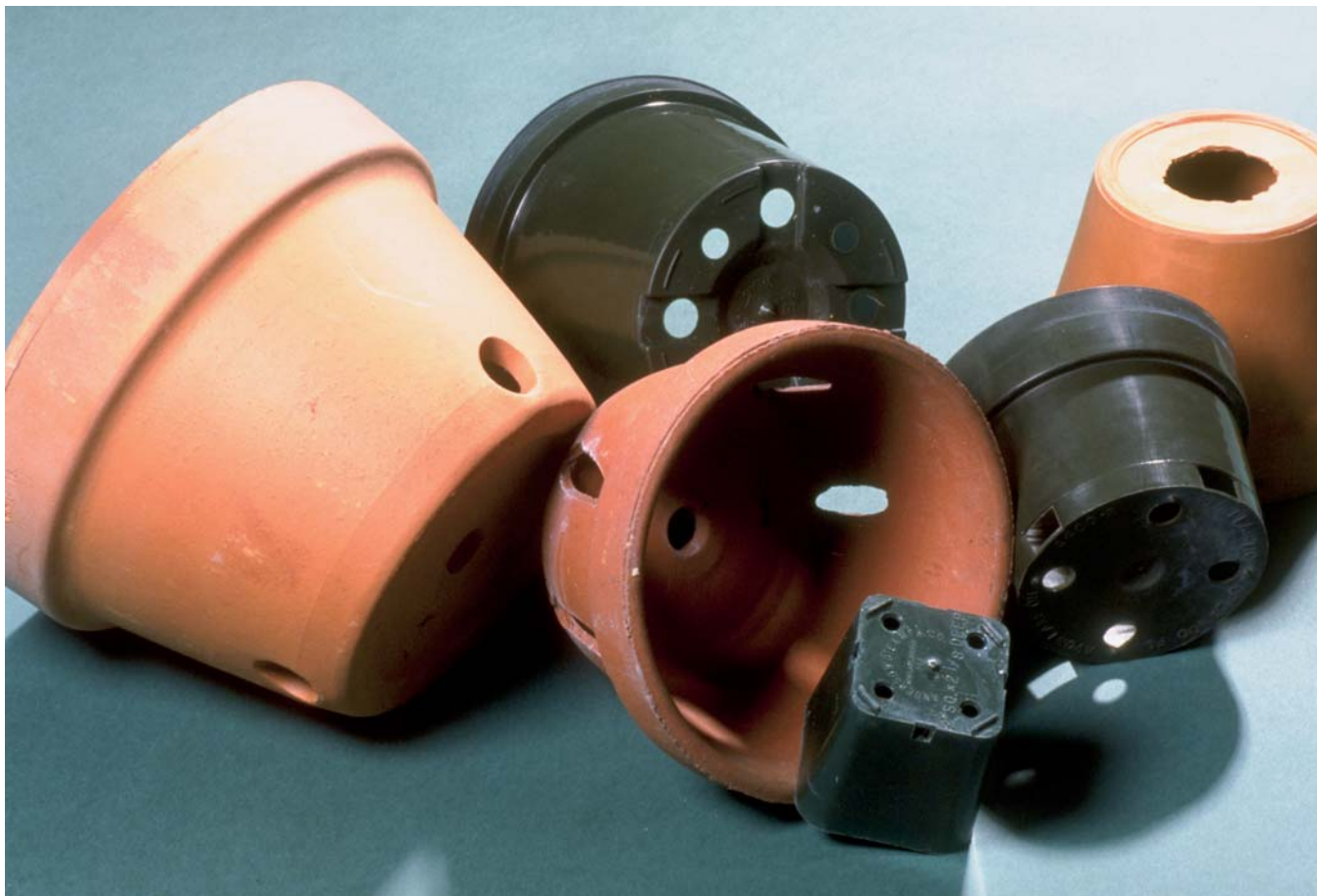
Analyze the old potting medium. To quote Marshall McLuhan, “The medium is the message.” How decomposed is it? If, after a year, it is already a miniature compost pile in a pot, adjust, if not for the health of the plant, for your own time management needs. Start using materials that are less prone to decomposition. Even



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some small changes like adding a third of redwood bark or more inorganic materials will increase the life of the mix. Also, try incorporating more drainage material such as Styrofoam peanuts or Aliflor® to the base of the pot. With some success, I have inverted a smaller plastic net pot inside the base of the pot to increase air circulation within the root zone. The old potting medium is a good indicator of the collective effect of the growing conditions, watering habits and medium on the health of the plant.

In mixes, the materials to which the roots affix and concentrate are great indicators of what they need to flourish. Certain materials, such as sphagnum moss, Pro-Mix®, rockwool, peat moss and smaller-grade bark, are more water-retentive. Other materials, such as tree fern, perlite, osmunda, Aliflor®, charcoal, Styrofoam peanuts and large bark, provide good drainage and air movement. Inorganic materials are smart choices for those of us who dread repotting and for plants that are better left potbound. The size of the material also contributes to its qualities. Medium or large bark is looser and less water retentive than seed



an orchid thriving when anchored in a ball of sphagnum contained in an onion bag hung from a hook.

Based upon your observation of the roots and the condition of the previous mix, you can begin conservatively by making subtle changes to your mix from year to year and genus to genus. Or you can break through and take some risks for potentially greater rewards. This is where making some notes year to year and repotting all of the plants in certain genera at the same general time can be beneficial in developing your understanding of the subject matter. This way, you can observe and compare the results of the previous year and highlight them in subsequent years. Over time, I have developed different mixes for cattleyas, vandas, *paphiopedilums*, *dendrobiums*, and the terrestrial botanicals such as *calanthes*, *pescatoreas* and *cochleanthes*. I continue to develop each of these mixes year by year. Do not hesitate to experiment with plants that communicate through the condition of their roots that they are not adapting well to what is working for others.

A few examples provide further guidance. Of course, these examples reflect my personal growing conditions.

After realizing in a panic one autumn that there was no way to fit all of my plants back in the house after being summered outside, I built a light room — replastered and waterproofed my basement walls, hung plastic to protect the joists and added a high-intensity-discharge (HID) light on a track. Generally, my temperatures stay in an intermediate range (60 to 75 F; 15 to 24 C) but the humidity ranges from 70 to 95 percent. The first year I had a lot of plants sleeping with their toes out of the covers. So keep in mind that my results will vary from yours. The adaptive repotting approach is a process, not an exact recipe. I never follow recipes anyway, but I'm going to guess that you figured that out already.

Brassias were sinking their roots deep into the pots and most of them were growing in the Styrofoam peanuts I had placed at the base. Through the years, I substituted more and more peanuts for less bark in the mix. Not only are they doing better with the increased air movement and drainage, but I am now spending less time repotting. The roots are now more evenly distributed in the container. But

OPPOSITE Wood slat baskets, which are available in a variety of sizes, provide excellent air circulation around the roots.

ABOVE Clay and plastic pots are popular for growing orchids in many environments, from windowsill to greenhouse. Orchid pots have either round holes or vertical slits in the sides of the container (above left and center), although pots with drain holes in the bottom work equally well.

with other plants, such as *cochleanthes*, I use Al

some small pieces of limestone to use as ballast for a few of these plants next year to see what happens.

The vandas that did best in my conditions were those in baskets into which I placed large No.1 charcoal chunks along with wine corks. But this year, I am trying a few in osmunda nests. In a drier northern climate, adding material to the vanda baskets is indicated, whereas in Florida the plants do better bare-rooted in the baskets due to the higher humidity levels.

I am comparing the growth of *tolumnias* in clay pots with Aliflor® or No. 3 charcoal and mounted on cork with coconut husk, as well as a few attached on tree fern using coconut husk fibers or sphagnum as a cushion for the plant. I spent last year picking out the sphagnum, as that did not seem to be beneficial to the plants.

Do not overlook the combination of the container and media types. I have a *Bifrenaria* that is doing well in a wood basket with shards of clay pots and occasional clumps of sphagnum inside of it. These are but a few examples.

HINTS FOR SUCCESS Whatever your approach, here are a few tricks of the trade:

- ◆ Do your repotting on top of a pile of sheets of newspaper. After each plant, you can roll up the newspaper and clear away the old medium easily and quickly. Keeping your potting area clean and materials from one plant away from others is standard operating procedure to prevent the spread of

virus. (A side note about virus: I recently tested most of my collection and some plants that I thought had virus did not and some that I thought were fine were infected. The bottom line is that you cannot always tell so it is best to take precautions to prevent the spread of virus from plant to plant.)

- ◆ Pot for the root mass, not the size of the plant's foliage. Use the smallest container you can into which the roots fit. You can always add a rock or other weight into the base of the pot to keep it from tipping. Or you can place the pot into another one for a heavier base. I unwittingly provided a perfect environment for a *Chysis* this way by potting it in a small plastic net pot with bark and sphagnum and placed it into a larger clay pot to hold it upright. The plant prospered, spreading roots through the net materials and along the clay pot that provided higher humidity and great air movement. If a plant has poor roots, try placing it in the smallest pot with seedling mix and sphagnum moss soaked in a rooting hormone.

- ◆ An orchid plant needs to be secure in its container or on its mount because new roots easily break. For most potting media, it should be well packed, with the exception of sphagnum moss. Plants seem to grow better in sphagnum moss when the sphagnum is circled fairly tightly around the top of the plant but a good portion inside the base of the pot is left free of material. The adaptive approach will guide you in this regard

indicating which plants need to be more tightly contained and which do better with more air around their roots. Rotting roots indicate that the medium is too water retentive and too tightly packed. Either way, secure the plant using rhizome clips, telephone wire, hair pins, unfolded paper clips, pantyhose or string.

Superthrive®. To prevent the spread of virus, the solution for each should be changed between plants. Of course, my collection has only about 300 plants. I think I might use another technique if I had 3,000. Following repotting, for the next two months I add some rooting hormone to the water solution for the plants, unless they are showing signs of spiking.

◆ At the earliest, most opportune time, before introduction into a collection, repot all new plants. While I questioned my own compulsive behavior in this regard, I do have to report that by doing this I probably saved myself a lot of future problems by discovering some hitchhikers, fungal problems and other issues before they spread to the rest of my plants.

◆ Whenever a plant is showing signs of trouble, offense is the best defense. Repot the plant and look at the roots. Treat if necessary. Change the potting medium and correct the issues observed.

◆ Thoroughly clean any pots that you choose to recycle. A bath of vinegar solution will dissolve mineral build-up (1 cup to 1 gallon; 240 ml to 3.8 L). Soaking in a bleach solution is an effective disinfectant (½ cup to 1 gallon; 120 ml to 3.8 L). After each treatment, rinse the pots well. Pots soaked in bleach should sit in a plain water solution for at least a day afterward to allow the chlorine to dissipate fully. I know someone who places pots in the dishwasher, although I have no idea how long that dishwasher will last after several batches of clay pots. Some bake their clay pots in ovens. The key is to sterilize them to prevent the spread of virus. If you find out that a plant has virus, discard the pot along with the plant. It may just be easier to buy new pots.

Instead of approaching the task of potting with dread of the rote activity of shaking loose medium, trimming roots, replacement into a new pot and filling and securing with bark, open up to adventure. While standard mixes and potting protocols may serve some of your plants in your conditions, experiment based on your observations and a frank and critical eye of your own habits. Take a creative use approach to materials available and enjoy the results. The adaptive repotting approach is a key to success in repotting of orchids. And success in repotting is success in growing.



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Mary Jo Gilsdorf first became intrigued with orchids during family visits to Longwood Gardens as a small child with her grandmother, Lil. In high school, when her family moved to Puerto Rico, she developed this interest through raising her first orchids and exploring the El Yunque Rainforest. When she went to college and later, law school, she left her orchids behind but maintained an interest in them, and in her travels to California, Colorado, Peru and Ecuador observed them in their native habitats. Mary Jo began her hobby in earnest again several years ago. She raises her collection of about 325 orchids in a variety of genera on windowsills, outdoors and in her basement light room. She is in her second year as an AOS student judge in the Mid-Atlantic Region. She is a member of several local, national and international orchid societies and enjoys speaking to them on her favorite topic. Mary Jo works for a major regional construction management company as in-house counsel. 430