

An Historical Orientation and Commentary On Orchid Potting Media

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NOTE: This article was first published in the 5th World Orchid Conference Souvenir Booklet, April 1966, Long Beach. Mr. Fordyce's historical sketch and summation is still important and valuable.

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Orchid plants are tough; they have to be! I've seen orchids growing in some of the most unlikely potting materials one could imagine: from marbles, stumps of trees, gravel, to pumice, and even plastic foam.

Without a doubt orchid media are the most often misunderstood factors in orchid culture. Basically, two general rules are wise to follow when searching for potting materials — they must be exceptionally well drained and aerated.

It seems logical that we return to the orchid's natural habitat to learn the individual requirements and basic environmental needs. When we do this we find two general classifications of orchids — epiphytes (plants that grow on other plants but do not penetrate their substance nor absorb their juices) and terrestrials (plants that grow in or on the ground).

Since it is impossible to duplicate the orchids' exact local environment, we strive to create a reasonable facsimile. For example, the cattleya is known to be an epiphytic type and is usually found growing high on the limbs of trees in the South and Central Americas. We have found that the roots do not derive their sustenance from the tree itself, but are designed to cling to the surface of the bark and wind themselves through the mosses and decomposed leaves found on the surface of the bark. Roots of this type of plant are protected from the sun by thin layers of sponge-like cells capable of absorbing many times their own weight in water. Although frequently soaked by rain in their native habitat, the plants are quickly dried out by the sun and wind. With these observations made in nature we know that roots must have free air circulation, plants must be well drained, and the material must be slightly acid.

For over a century the principal potting material was *osmunda* fibre, the fibrous roots of the cinnamon fern. Correct potting in this material was difficult and time consuming. Because of its relative scarcity, *osmunda* became quite expensive and growers, recognizing its limitations, began searching for a more simple potting medium.

Another of the methods used to propagate orchids

was the hydroponic method of growing plants in an inert medium, such as gravel or pumice. Required fertilizers were flushed through the root system at the time of watering. The correct nutritional balance was difficult to maintain.

Others have tried using shredded redwood and oak leaves and found this combination decomposed far too rapidly. Redwood shavings were popular for a time, but the supply of true redwood became scarce and this too was discarded.

Tree fern is another popular material used in potting epiphytic orchids, for it too is slightly acid, has excellent aeration, and breaks down slowly. An advantage tree fern has that other mediums lack is its extreme long lasting quality. Frequently, the entire root ball may be shifted into a larger pot intact without removing the old material. Fresh material is added around the old root ball and firmed tightly resulting in a savings in time and cost of material and practically no shock to the plant whatsoever.

As orchid growing progressed, commercial growers became more aware of the costs of potting materials, the length of time it could be utilized before decomposing, and the time involved in potting. The popularity of growing orchids as a hobby began to grow by leaps and bounds after World War II. Where it was once a hobby pursued only by wealthy estates who maintained a staff of gardeners, the hobby has increased tremendously and today thousands grow nature's most advanced plant as a backyard pastime.

Around the 1950's growers were urged to try several types of tree barks as potting materials. As these were by-products of the lumber industry they were relatively inexpensive, available in quantity, and gained wide usage in a short time. The ease of handling while potting combined with the relative ease of watering gained immediate favor with hobbyists. Several kinds of bark are on the market under various trade names; redwood, cedar, and pine are offered, but fir bark (botanically, *abies concolor*) is used widely by growers and hobbyists alike.

When bark was first introduced it was not graded into its present refined grades. Much wood pulp was present and caused mycelium fungi to grow within the pot preventing water from reaching the root system. The fine dust particles were not entirely screened out and this too caused trouble as the bark tended to pack solidly, excluding both air and water.

Today, these problems have been corrected and fir

bark is available in many graded sizes free from dust or fractions. Four basic particle sizes are available. The smallest size is *fine* and contains small chunks 1/8 to 1/4 inch in size. This grade is used for potting small seedlings. Next is *medium* size bark with chunks from 1/4 to 1/2 inch. Many use this in potting cattleyas up to the 3½ inch pot size and also for thin rooted orchids such as miltonias and dendrobiums.

The *standard* size bark is a general all purpose grade that is used for mature sized plants. Chunks range from 1/4 to 1 inch in size. The *coarse* grade contains chunks from 1/2 to 1 inch in diameter and is used chiefly for the fleshy-rooted orchids such as vandas and phalaenopsis, or large specimen plants. Pot into plastic containers, water profusely, and fertilize once per week.

Fir bark has a natural pH of 3.7 to 4.1, being fairly acid. Some growers add dolomite lime to their potting mix to correct the acidity, but most areas do not require this addition as the water used appears to act as a buffer to the slight acidity of fresh bark. Watch your watering schedules carefully, for as bark becomes older it retains a higher content of water and begins to decompose. New bark needs more water — old bark less. When you do water, *always* water thoroughly to leach out any accumulated salts. Naturally, different size plants retain moisture for varying lengths of time and pots should be grouped together for ease of watering.

Many growers find that adult cattleyas do well in a mixture of 2/3 fir bark (medium or standard grade) and 1/3 redwood chips (medium grade). This mixture holds the moisture somewhat longer than straight bark.

Before potting pre-moisten any material used as a growing medium. This makes it easier to work, settles any fine dust, and prevents the potting medium from absorbing valuable moisture away from the roots of the plant.

All bark growing materials are deficient in nutrients and a fertilizer program should be followed. We suggest one of the high nitrogen soluble fertilizers available from most orchid growers. Set up a schedule and fertilize at least once every two weeks.

In turning to the terrestrial types of orchids, the potting medium becomes somewhat more complicated. Scores of combinations of mixes are used by commercial growers with general success, but all of these follow a certain basic formula.

While researching the cymbidium orchid we find that it grows in moist areas in Asia, where the growing medium is porous and slightly acid. When found in their natural state, cymbidiums frequently do not send their roots down into the actual soil itself, but the roots

stay in the loose, open, not quite decayed top litter of the forest floor. Roots reach only 6 to 8 inches below the surface of the litter but seldom enter the true soil itself.

With this in mind potting materials have been devised that simulate the cymbidium's natural growing medium. We find that the mix should be slightly acid, porous, should not contain clay, and should not break down rapidly. Actually, cymbidiums enjoy the same general type of mix as camellias, fuchsias, ferns and other shade plants. They require large amounts of water but will not tolerate water standing around their roots.

A typical mix might contain these ingredients: fir bark, clay free sand, redwood shavings or bark, dry organic fertilizers, and possibly lime to correct the acidity. Oak leaves too may be used with success, but tend to decompose rapidly, thereby changing the structure of the mix and its chemical balance. The ideal potting medium should remain stable for as long as possible without change. Prepared mixes are sold by many orchid nurseries.

A cymbidium mix currently gaining in popularity because of its relative simplicity and growing results is:

0 - 1/8 or 0 - 1/4 fir bark

10% sand by volume, using a medium grade sand such as plaster sand.

(Avoid coarse material containing gravel)

The fertilizer additives for this mix should consist of the following:

Amount per cubic yard of mix:

3 lbs. single superphosphate

1/2 lb. potassium nitrate

10 lbs. calcium carbonate lime

10 lbs. dolomite lime

7 lbs. organic nitrogen such as blood meal,
or hoof and horn meal

It is a proven fact that many types of orchids withstand tremendous amounts of abuse. Cattleyas have been grown in glass marbles for years with nothing but an occasional watering of tap water, but this is not proof that orchids do not require fertilizer. This merely points out their tenaciousness and ability to adapt themselves to poor situations.

As we progress in our knowledge of orchids, we are constantly searching for potting medium that are the best for each of the types we grow. Since our orchids come from different environments, one simple potting mix is not always the answer, but at present we find the general usage of fir bark to be the most popular and as satisfactory as any medium available.

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