Buying Seedling Orchids

by Sue Bottom, sbottom15@hotmail.com

Some people only buy orchids in bloom so they can choose which orchid flower they like the best. These plants are usually more expensive, because they are mature enough to flower and are often sold in a larger pot. If I see a drop dead gorgeous flower, I may throw my Scotch heritage to the winds and buy the flowering plant, but more often than not, I can be found at the seedling sales tables where small plants in 2 or 3 inch pots are being offered.

Buying seedling plants in smaller pots is a more cost effective way of expanding your collection. Of course, you have to grow it into a mature size before it will flower well for you, and this is contrary to the instant gratification we often seek. But, there is something special about growing a small plant into a large plant and seeing the buds form and the flowers open for the first time.

Some people are overwhelmed by trays of seedlings. They are unsure which variety to buy or which plant they should select. Some reflexively buy one of each seedling offered. Perhaps a more rewarding approach is to evaluate how variable the seedlings may be, and buy multiples of the ones that will likely show a spectrum of flower colors, sizes and shapes so you can select the best ones to keep in your collection.

How do you decide which or how many seedlings to bring home?

The first thing to determine when you're shopping is whether the plant is a mericlone, in which case all the seedlings in the tray are theoretically genetically identical to one another. Mericloning is a tissue culture technique use to mass produce orchids. Meristematic (actively growing) tissues like the shoot tips, buds, etc. are cut from a plant and grown using fairly elaborate chemical and mechanical procedures under clean and sterile conditions producing potentially thousands of plants, all identical to the original. If you see a tray of mericlones, you are looking for a healthy, vigorously growing seedling that you can bring home, expecting it to bloom exactly like that sample plant or picture. You only need to buy one.

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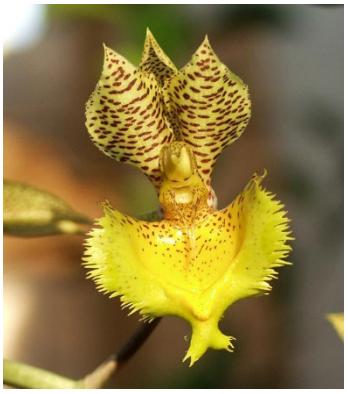
In nature, populations of orchids readily interbreed, thanks to their pollinators, producing variations in the color, shape, size, etc. in the next generation of orchids. This is all too random for the dedicated species breeder who would like nothing better than to improve on Mother Nature. If you see a tray of species seedlings propagated by seed, check to see whether it is a selfing, a sibbing or an outcross to give you some idea of how much variation you might expect in the offspring. If it is a sib cross, where two plants from the same seed pod are interbred, or an outcross, where two cultivars of the species are bred together, the hybridizer was likely line breeding. Line breeding is used to try to improve the shape, form, size, color, etc. of the hybrid by using two select forms of the species to produce even better offspring. You would expect a relatively uniform group of progeny. There will undoubtedly be one that has a slightly bigger flower, better shape or more color. You'll once again look for a vigorous growth habit, perhaps wider leaves or thicker substance. You might just select one of these from the tray, or if you really like the species, maybe a few to bloom out and select the one you like best as the keeper.



Ctsm. fimbriatum 'Golden Horizon', photo by Fred Clarke

Ctsm. saccatum 'Dark Wonder', photo by Fred Clarke

Ctsm. Dragon's Teeth 'SVO' AM/AOS, photo by David Nickerson

You can see the open hairy lip from the Ctsm. fimbriatum and the wide sepals from the saccatum in the primary hybrid Ctsm. Dragon's Teeth.

If it is a selfing, where the pollen from a plant is placed on its own stigma to form seeds, either the hybridizer only had one plant to propagate, or the hybridizer is trying to tease out some recessive traits from the parent plant. By recombining the parental genes, you would expect more variation in the offspring than with a sibbing, with a few perhaps that exhibit some recessive trait like an unusual color. You might just select one from the tray, although you might be tempted to buy multiples to see if you can get lucky and find a rare alba or coerulea flower.

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Ctsm. expansum 'Linda'

Ctsm. Orchidglade 'Davie Ranches' AM/AOS

Ctsm. Susan Fuchs 'Burgundy Chips' FCC/AOS

Ctsm. Orchidglade is a primary hybrid between expansum and pileatum, it was backcrossed to expansum to produce Ctsm. Susan Fuchs. photos by Fred Clarke

With hybrids, the degree of variation depends on the parents. Primary hybrids are the product of two interbred species so the offspring get half the genes from the pod parent and half from the pollen parent. The hybrid seedlings are midway between the parents, with only a little variation such as what you see in your brothers and sisters. Another benefit is they often exhibit hybrid vigor, where the primary hybrid is easier to grow than either of its parents. Species have often evolved to thrive in a unique ecological niche, so the meshing of genes from two species often results in plants that can tolerate a broader range of climatic conditions.

If one of the primary hybrid's parents is a tetraploid (usually denoted as 4n on the plant tag), it has twice the number of chromosomes as the other diploid parent, so it will have a greater influence on the offspring, with the offspring looking more like the tetraploid parent.

If the primary hybrid is then crossed with another cultivar of the same primary hybrid in a sib or outcross, there will be a lot more variation in the offspring as compared to a hybrid between the two species. The genes will sort differently so the progeny will be more variable, looking more like the pod or the pollen parent or anywhere in between. As Courtney explains in *American Cattleyas*:

> *The only hybrids that always contain a specific proportion of chromosomes from one parent are primary hybrids, a cross between two species. They inherit one set from each parent. If two siblings of a primary cross are used to make a hybrid, individual seedlings may contain any combination of chromosomes that originated with either grandparent species from 100% to 0% although the probability for such an extreme event is rare.*

If you decide to buy more than one plant, you might select your seedlings based on the plant morphology, selecting one having the widest leaves, one having the tallest growth habit, or one having lots of red pigment showing in the leaves if looking for color or no pigment if looking for an alba.

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When primary hybrids are crossed with different species or hybrids, the progeny are known as complex hybrids. The goal of most hybridizing is to blend the desirable characteristics of each parent to produce a plant or flower that is an improvement over either parent. The hybridizer might be trying to combine the flower size from one parent with the flower color from the other parent. After several generations of breeding and cross breeding, it can be difficult to see the contributions from the various species involved in the hybrid.

Ctsm. Red Dragon is a hybrid between Dragon's Teeth and Susan Fuchs, and only contains the genes from four species, but look at all the variety in the seedlings. If you only bought one of these seedlings, what are the odds that you would have been lucky enough to bring home your favorite?
photos by Terry Bottom

The more complex the hybrid, the more variation you expect to see in the progeny. When you find a seedling you think might be interesting, ask the vendor how variable he expects the offspring to be. You might consider buying multiples of a seedling that strikes your fancy, so you can enjoy the variety imparted by the different genes inherited from the parents.

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