St. Augustine Orchid Society

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Growing in Lava Rock… Two Years Later

September 2007

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Orchid Growing Tips

During the past 3 or 4 weeks I have had some time to spend in the greenhouse and time to review my orchid growing culture. It is often difficult to accurately assess whether cultural changes have really improved the growth of your orchids because too often all we remember is the problem plant or the night slugs ate your prize buds just before they opened. One approach that I find useful is to examine my use of pesticides, fungicides, and fertilizers from year to year in light of my culture. The application of these products often reflects large-scale problems.

What I discovered is that I had drastically reduced my use of pesticides and fungicides. That does not mean that there have been no pests; juvenile crickets have occasionally chewed on new buds. There has also been an occasional rot here and there, but nothing widespread. The greatest surprise was how little soluble fertilizer I had used. The next question is whether my orchids have grown better or worse between years. The mantra among the best orchid growers is if orchids are provided with proper light, air circulation, good water, and nutrition there will be few pest and disease problems.

With the exception of a small collection of vandaceous orchids, new pseudobulbs on cattleyas are larger this year, with more flowers and roots. Phalaenopsis not only survived in the 100 degree heat this summer, but they also produced several new leaves simultaneously. There has been the occasional orchid that “bit the dust”, but, generally, this has been a great growing year. WHY?

If you want to become a good grower you must keep records so you can determine what worked and what has not worked. Most significant for me has been the fact that very cold conditions, below 50 F, in late spring did not result is widespread rots in phalaenopsis. Similarly, in day after day of searing summer’s heat, there have been very few bacterial or fungal rots. In the 25 years I have grown phals, this has never happened before.

Several years ago, a number of growers in the International Phalaenopsis Alliance had the elemental content of their phal leaves tested. What surprised me was the amazing variability among growers and the surprising concentration of some micronutrients. The take-home lesson for many phal growers was that these orchids could grow under high nutrient conditions without any significant cultural problems. What was not said was that many commercial growers whose orchids were tested used almost constant antifungal and antibacterial treatments to prevent rots.

My suspicion was that many growers did not provide a balanced nutrition which left their orchids susceptible to rots once the protection of constant fungicides was removed. It was extremely frustrating to purchase magnificent phals that would develop just about every rot known within a couple of weeks in my greenhouse. Meanwhile, phals right next to these new phals grew just fine. If I repotted the new phal and kept it alive long enough to grow

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new leaves it would often thrive under the same conditions that previously led to rots. Even so, I still thought I had more rot problems than average.

Thus, my cultural goal for many years has been to find the perfect nutrition for optimal growth and disease resistance using the water available to me. Unless you use RO water or rain water, water varies greatly with respect to both the quantity of dissolved elements and the proportion of one to another. The dissolved minerals often affect the growth of orchids and may even limit whether your fertilizer is available to your orchids. Within any area, growers have figured out what fertilizer works best given the water available. Even the most accomplished grower must change their culture if they move to a different water supply. Those that grow orchids well with few problems have found the perfect mix of water and nutrition.

Several years ago I decided that the key to finding the right balance of nutrients was to eliminate changes in nutrient availability and pH brought on by decomposing media. So, as I began to repot my orchids each was placed in lava rock. Lava rock, while inert, retains a surprisingly large amount of water and will even accumulate a little salt, but the medium does not change as it degrades or accumulates nutrients. Flushing pots thoroughly once a month produces the same environment for roots no matter how long the orchid is in the pot. The lack of an organic matrix to hold nutrients eliminated possible salt buildup, but required regular nutrition since very little is retained by the lava rock. The use of 13-13-13 Nutricote has worked well to provide the constant feeding required in lava rock, despite the tendency for the grey pellets to fall to the bottom of the pot. Apparently, enough of the pellets are retained in the rock to allow great growth.

Once a week, if I have time, a very weak fertilizer solution of Jacks 12-2-15 RO is applied (1/16 teaspoon/gal). This fertilizer is specially formulated for rainwater and contains high levels of calcium and magnesium required for proper plant growth. This solution is sprayed on plant leaves after plants have been watered. The nutrient level is very low but supplies the extra calcium & magnesium I think orchids need. This weak solution has a pH of 6.5, which is similar to the pH of rainwater here on the coast.

Soluble high nitrogen fertilizers must be used with caution as they can produce very low pH levels in RO or rainwater; levels low enough to kill orchid roots. For instance, delivery of 100 ppm of N, a feeding rate used by many commercial growers, (1/2 teaspoon/gal) will produce a pH of 3.93 that will damage roots. The manufacturer recommends using a buffer to raise the pH, but this is more than most hobbyists can manage. Thus, I rely on Nutricote to deliver the key nutrients of nitrogen, phosphorus, and potassium.

As noted earlier, the only orchids that have not responded to this change in culture have been vandas in open baskets. I interpret this as evidence that my weak solution of high nitrogen fertilizer does not deliver enough of this key nutrient. Despite attempts to place

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Nutricote in bags above the vandas, they are clearly not growing as well as they have in the past; no doubt due to a nutrient limitation. Vandas in lava rock have grown extremely well, again indicating that nutrient limitations are a problem for my vandas growing in baskets.