St. Augustine Orchid Society

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The Truth About Light

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Orchid Growing Tips

Once upon a time I spent a great deal of time trying to understand both the light requirements of the many orchids in my collection and the light levels in my growing space. This is no longer a priority for me because I have discovered how adaptable most orchids can be if given half a chance.

When Mark Rose, formerly of Breckenridge Orchids, allowed me to measure the light levels in his greenhouses, I was surprised to find that he did not worry about light levels. All areas of his greenhouse received the same amount of shading (40%) year round. While most of his orchids were phalaenopsis and paphs, there were also large sections of cattleyas and even a few vandas as well. All of his orchids looked great and flowered well!

What was apparent within the greenhouse was that there were still zones, but they were arranged based on temperature, not light levels. "Cool loving" or at least "high temperature hating" orchids were located close to the cooling pads, while those that thrived in heat were at the other end of the greenhouse away from the cooling pads. The lesson is that the heat in the leaves is far more critical than the light itself. Each little leaf is essentially a little greenhouse that can only be cooled by direct convection (dissipation of heat) or by opening the little stoma under the leaves and allowing water to evaporate, which cools the leaf.

The key to the successful technique for Breckenridge Orchids was not just that there was extensive air movement in the greenhouse or the use of cooling pads, but that Mark allowed his orchids to adapt with the seasons.

Orchids and most plants have a variety of mechanisms through which they change with the seasons. Under lower light levels, chloroplasts are closer to the surface than under higher light levels. In high light, leaves also decrease heat absorption by changing the color of their surface from deep green to yellow green. Most hobbyists notice the difference in the color of orchid leaves when they bring a new orchid home and it is different in color from the rest in a collection. One only has to worry when the new plant is darker than other plants in your collection, which makes it susceptible to burning.

Orchids can acclimate and grow just as well with less light or more light if given time. Commercial growers know that to obtain maximum growth, they need to produce conditions where the growth is maximized and the potential damage from leaf burn on an extra hot day is minimized. There is also a real important phenomenon called photo

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inhibition, when heat and light levels are so high within the leaf that photosynthesis is inhibited.

Seedlings have less potential for handling heat stress and generally are grown under lower light levels. Their thin leaves are more susceptible to over-heating just as a small greenhouse heats up more quickly than a large greenhouse with more volume.

If light levels are monitored continuously in a greenhouse there will be a peak at mid-day with light and heat levels lower before and after the peak. An orchid may be photo inhibited near mid day, at optimum just before and after that time and not reaching maximum photosynthesis for most of the day. This is where growing under lights has a real advantage. Light can be optimized for the entire day. It is not surprising that many indoor growers are able to grow under lights so well that they receive AOS awards.

Today's lighting systems are far superior to what was available a couple of decades ago, with lights that generate exactly the correct wavelengths of light for plant growth. Some hobbyists add lights to their greenhouse and augment light early in the morning and in the evening to maximize the light delivered to their orchids. A lighting system can also be a useful way of augmenting the afternoon or morning shading in your greenhouse from a nearby tree or house.

Lights on early in the morning and in the evening can maximize the light delivered to greenhouse-growing orchids. A lighting system can also be a useful way of augmenting the afternoon or morning shading in your greenhouse from a nearby tree or house.