

SHOWY MEXICAN ORCHIDS for the PALOMAR Orchid Society:

Where they come from and how they grow.

Understanding where orchids come from help us understand how they grow. This presentation takes us first on a quick trip to Mexico so we can become familiar with their homes in nature.

Through our travels we learn a lesson in growing orchids, that **Orchids are people too!** Think of what makes you comfortable and give that to your orchid -- You have **WANTS** and so do they. Learn the acronym and how each factor interplays and affects each other. Whether you grow indoors, outdoors, or in a greenhouse, you will need to learn how to adjust the five basic factors influencing the growth of your plants. They are all interrelated and by altering one of these factors, you will be required to adjust the other four. They must be **BALANCED** and the key to successful orchid growing is moderation in all aspects. It's amazing, visualize **your wants** and needs, and apply them to your orchids!

Water- quality, quantity and frequency.

Air- quality and movement, for gas exchange.

Nutrition -fertilizer, vitamins and alcohol.

Temperature -They do not use clothing!

Sunlight -The **ENERGY** that makes food.

Water - **Quantity** - amount - **ONE INCH**, is a good watering, but not applied in 30 seconds!

Applied over 30 minutes or more is great, like rainfall. **YOU CAN APPLY YOUR FERTILIZERS WITH EACH WATERING. YOU CANNOT APPLY YOUR FERTILIZER WITH EACH REFRESHING.**

Frequency - **GOOD WATERING every 4-14 days**, depending on A,T and S. Refreshing may be as often as 3 times per day, just wet the leaves and let dry. Humidity - above 50% if possible. If not, **WATER MORE!**

Quality -- salts - measured in PPM parts per million or Electrical Conductivity available - always get at least one complete analysis. **pH** - acidity/alkalinity (Calcium - basic; Sulfur - acidic) 6-8 Okay.

Orchids grown in pH's of 7-8 have less disease problems because many diseases will not grow in Alkaline conditions. Contaminants - Chlorine, Calcium, **SODIUM FROM WATER SOFTENERS - A DEFINITE NO+NO!**

distilled - **NEVER USE PURE DISTILLED WATER** - you need at least 80 ppm **GOOD SALTS** in your water - remix regular water with distilled, at least 20 %. Rain has 80 ppm's of good salts.

Water is a very important factor, which will determine your success with Mexican orchids. **Quantities** we can split into how much and when. Your water **Quality** will affect greatly the amount of water you give with each watering. If your soluble salts are below 200 ppm then you will require less water, less frequently. Above 200 ppm and you will have to leach with larger amounts of water over a longer period of time during each watering and never allow the media to totally dry out. If it dries out too much, burning of the roots will occur due to the increase in concentration of salts. Regardless of the concentration of salts in the water, you should always water until it runs through the media and out of the bottom of the pot. Allow the pot to dry out between watering, unless you seek hydroponic roots. This will create problems for the plant if removed from the continuously wet conditions. The amount of time between watering will be determined by the pot size in relation to the plant size; the type of media used; the relative humidity in your greenhouse and the temperature. In Southern California, excess water is seldom an issue. If it ever happens you just spray preventative fungicides biweekly!

Your observation is the best guide as to how often you water. Let the orchids be your indicator. Giving them the same treatment you should observe each new growth bigger than the previous one. To the contrary, you will have to analyze your **WANTS** and adjust to make it better .

Water requirements are placed into the following groups for purposes of the species charts found on the web site:

A. Water plentiful year round. **B.** Water heavy spring, summer and fall, with lighter watering every ten days during the winter. **C.** Water heavy during spring, summer and maintain a high humidity, at least at night, during the winter (but no water).

Go to www.abundaflora.com click on orchid photos + MEXICAN► then on printable genus and species list + repeat on the right side to obtain the chart legend.

Air quantity movement gas exchange quality

AIR MOVEMENT- is a must for all Mexican species. When using high air movement, maintain high humidity. Moving air also eliminates water logged conditions and also helps supply fresh gases for growth. Orchids are growing 24 hours a day, even at night. With sunlight during the day, they produce food which is consumed both day and night. They do produce oxygen during the day, and to do this, require carbon dioxide, which they also fix at night for consumption during the day. However, during the night they require oxygen to grow and will produce more carbon dioxide. Therefore, constant air movement will permit these gas exchanges. Could you live with your head in a plastic bag? (people!)

Nutrition - fertilizing, feeding => quantity - quality - delivery system

FERTILIZATION- is a must to obtain good growth and bloom. You might think, if they grow wild without fertilizer, then why fertilize. I have yet to see a plant flowering in the wild which compares to a similar plant well grown and well fertilized in culture. It doesn't take much fertilizer and too much is worse than none. **Fertilizers are salts**, so remember about your water quality. To simplify this recipe, always use a balanced fertilizer containing equal parts of $N-P_2O_5-K_2O$ = Nitrogen, Phosphorus and (K) Potassium. Ideally it should contain a very small amount of **trace elements** or **micronutrients** and it should be water soluble.

For those familiar with fertilizer calculations, **100-200 ppm every fifteen days of N- P_2O_5 - K_2O** in your irrigation water will be sufficient **OR** you can supply this with every watering for greatly increased growth. For those not familiar, simply dissolve **one teaspoon of 20-20-20 per gallon of water** and apply it to your plants once every two weeks. If your formula is 10-10-10, then use 2 teaspoons, etc. Remember as temperatures lower, you must reduce your watering frequency and also your frequency of fertilization. Please use the following logic (people) with fertilizers. Think of it as salt in your food, no salt has no taste, too much tastes bad and just the right amount enhances the flavor. Your orchids will love you for just the right amount. I will give you a few tips which can change the way you grow orchids, forever. Do you take vitamins? I recommend **Superthrive with every fertilization, especially between March and September**. One to four drops per gallon, four in the spring and summer and one in the fall. How about that cocktail in the evening? **Adding the equivalent of a tablespoon of Vodka in 5-6 gallons of fertilizer water**, will double growth, pop all dormant eyes, extend the life of organic media and quadruple your root system, **plus** kill many bothersome insect pests. Alcohol is an adjuvant, ***give your plants a Happy Hour***, (remember, orchids are people, too)!

The delivery system! It's not rocket science, it's just the placement of the fertilizer on the plants! Hose-ons, which attach to the faucet with a feeder tube on its side **DO NOT WORK**, **unless** your hose is just 15 feet long. I think liquid feeding is the only way to go, unless your plants are outside and it rains on them every few days. If this is the case, then apply lightly, 10+/- granules of **NUTRICOTE, (Dynamite at Home depot)** every 2-3 months per 4 inch pot. That is a **PINCH**, and for every inch bigger in pot size add another pinch, **SPREAD OUT**, not in a heap and covered. For fertilizing I highly recommend the Gilmour **END OF THE HOSE SPRAYERS** - 5-6 gallon capacity, cost \$3 at Home Depot.

Fertilize once a week, on bright, hot, sunny summer days maybe do it twice. That is usually my **ONLY** heavy watering. The rest are used to maintain humidity and lower high day temps and may be as much as 4 times a day. Looking at the plants you can tell when they need more water and it is not on any real schedule other than a one minute sprinkle programmed on a timer at 1:00, 3:00 and 5:00 pm. Your average summer days may reach 100 F in Southern California. You will seldom have this problem because of your location in the west. Plants which require cooler conditions will have to be grown using more shade +/- or a wet wall. When I fertilize, I water the plants down within 30 minutes before fertilizing. If there is too much fertilizer in the water, the plants have already made their initial absorption of plain water and they won't burn because they are sucking up volumes of salts. This pre-watering also breaks the surface tension on the surface of the roots and leaves, and allows the fertilizer water to come into contact directly with the surfaces. The plant will then select which nutrients and quantities it needs to absorb. Even if you use **Nutricote-(Dynamite)**, you might consider a supplemental watering with alcohol and organic micronutrients.

- **WATCH** this presentation at: www.abundaflora.com/SBOS, click on SBOS0408.pps

Fertilize once a week between 9 and 10 AM on any given day, the following solution. Make your mix in a 5-6 gallon, end of the hose sprayer (one quart proportions out to six gallons of finished solution). To make "the bomb" add:

(Ammonium Nitrate - 1 TBSP) + (Potassium Nitrate - 1/2 TBSP) + (Monoammonium Phosphate - 1 TSP) + (Maxigrow - Seaweed supplement - 1 TSP) + (Fish Emulsion - 1 TSP) + (SUPERTHRIVE - 1/8th TSP) OR to make ROCKET FUEL WHICH GETS YOU THE SAME PLACE AS THE BOMB, BUT COSTS A BIT MORE!!! add:
(DYNAGRO - GROW FORMULA - 2 TBSP) + (Maxigrow - Seaweed supplement - 1 TSP) + (SUPERTHRIVE - 1/8th TSP)

Temperature - daily seasonally maximum-minimum

Temperature is of major concern in successful orchid growing. Daily as well as seasonal temperatures are important. Since the orchids of Mexico are concentrated between latitudes 14 and 24 degrees north, there exists an average difference of 7-10 degrees C between summer and winter temperatures. Apart from this seasonal difference, we have the major division of species by temperature derived from elevation. For every 300m rise in elevation there will be an average drop of 1 degree C. Combining the effects of elevation and seasons you obtain considerable extremes. These extremes are what make Mexican species more tolerant of greenhouse conditions in higher latitudes and somewhat easier to grow than species collected near the equator. Therefore adjust your fertilizations and waterings to create a seasonal cycle.

For simplification of the individual species temperature requirements, we divide them into the following categories (**H to C are recommended for most areas of Southern California**). It is easier to heat than to cool, except for you in the winter! Hot is good for you here because YOU like it warm even in the winter.

H -Hot. These plants come from 0-600m (0-2000 ft) elevation. Most tolerate cooler temperatures in winter and thrive in hot summers. Temperatures below 10 C (50 F) will normally cause a cessation of growth and adversely affect flowering. Ideally 18 C (65 F) nights and up to 32 C (90 F) days are required.

I -Intermediate. This temperature group covers the majority of species in Mexico. The 1000m contour appears to be the center of diversification for epiphytic orchids. These plants grow well in average temperatures between 10 C (50 F) and 27 C (80 F). They are quite tolerant of more extreme temperatures and if grown drier in winter will even tolerate freezes. They come from elevations between 800m and 1600m.

C -Cool. This group is definitely one of the most difficult to cultivate anywhere. They thrive with low night temperatures of 4 C (40 degrees F) or below, high humidity and often very bright sunlight, especially in winter months. They range from 1700m to 2700m elevation.

SUNLIGHT quantity intensity duration quality

LIGHT INTENSITY, or the amount of sun light, is a simple factor, easy to express and understand. In the USA it is normally expressed in foot candles. **In Mexico most of the orchids come from deciduous oak forest** which lose their leaves for three to five months out of the year. During this time many species are exposed to full sunlight. At high elevations, we are talking a maximum of 10,000 to 12,000 foot candles of light at noon. Remember, they usually get broken shade from branches above or cloud cover, so the exposure is seldom continuous.

In terms of shade cloth, 50% to 63% shade will provide optimal conditions for the growth and flowering of most species. A lush green plant many times will not flower. If you have plants that are green and pretty, but never flower, try putting them in brighter sunlight. **Avoid sunburn or scorching of the leaves.** This may occur when you make the transition from *too* much shade to adequate sunlight, remember **moderation**. It initially appears as a lighter area on the leaf which gradually turns black from the center outwards. If the damage is done, cut off the leaf using a sterilized implement just below the burn. The new growth will reward you with flowers and hard sturdy pseudobulbs.

Since not all plants are adapted to strong light, we give you the recommendation for each species according to it's light requirements in the chart and here we list popularly cultivated genera of other orchids which you might already grow well in your collection. Culture by association!

A. Strong sunlight -30 to 50% shade -7000 fc to 4500 fc., Cymbidium, Vanda.

B. Medium sunlight --55 to 73% shade -3700 to 2700 fc., Cattleya

C. Weak sunlight -80 to 90% shade -2000 to 1000 fc., *Phalaenopsis*, *Paphiopedilum*. Here again, light, as with water, should be adjusted according to your observations and your analysis of those observations for your area.

Orchids are orchids and many come from similar habitats. You have the knowledge base of other species and hybrids - so - build upon your existing knowledge. You know the **WANTS** and you may have a taste for a particular group of orchids. Compare the groups you like with the Mexican species. Of course, the measurements are not precise, so they can fluctuate 10 % up or down in most cases without harm. The stronger light you provide the more you will have to provide of the other **WANT** factors, but you will be pushing the limit on optimum or even maximum growth.

Finally we come to the **DIM** part of orchid growing, (= **Disease**, **Insects** and **Media**), where we choose what will anchor our plants and protect them from **unWANTED** attacks. As important as the **WANTS**, are the remedies for your plant illnesses. As for disease, an ounce of prevention is worth a pound of cure. Disinfect your tools. Periodically clean your benches. **Keep weeds out**. Speaking of weeds, you should try using KARMEX, but make sure it has **ONLY DIURON** as the active ingredient. Use 1 TBSP per gallon and it will control ALL weeds, including Oxalis. Use a small hand spray bottle and try to cover the weed leaves well. It takes them a few weeks to die, but they do, and it won't even hurt the orchids. **Space your plants** to provide good air circulation and light. Set up a **preventative spray program alternating fungicides** and always combining them. Our shotgun for root problems is a combination of Subdue, 1 oz(9 drops/gal.), and Cleary's, 1/4 lb(1 tsp/gal) per 100 gallons. This is watered into the pot every 20-30 days and gives 99 per cent effective control of root diseases. If you have good air movement and don't over water, disease should be no problem. **If you have a disease**, first **identify** it, find out where it comes from, what causes it, and what **specific fungicide** will cure it or prevent it. Remember, fungicides are specific to certain fungi and one brand will not control all of the different diseases. A little investigation can save you a lot of money and a lot of plants.

Spray for insects only when you have to and only for the specific insect which is attacking your orchids. Many insects are beneficial, and so are you, so be careful with insecticides and use them only according to the specifications on the label. Watch out for cockroaches, slugs, snails, squirrels, rats and rabbits as they all may partake of the green leaves and roots you've made so easily available. Observe for bugs. Drop in on your orchids at varying times of night and quietly observe the activities going on in your collection. You will be surprised how much you see. I have used about every insecticide during my career. We used to joke about using DDT instead of milk in our coffee. Of course, I don't drink coffee anyway! The only insecticide I really go for nowadays is Orthene. It seems to control everything and doesn't hurt the plants. I use 2 TBSP in a six gallon end of the hose sprayer and wet them down as if I was watering.

Your growing **media** and watering go hand in hand. Your media can be many things; peat moss, perlite, ground barks, volcanic rock, calcined clays, tree fern, Osmunda fiber, pieces of wood or cork slabs, even old shoes! The species will determine which media you use and by experimentation you will discover the one best suited for your species and your greenhouse. We feel the best media to use in general is the one you have available at a reasonable cost. Use what you have and experiment. All media should provide; **SUPPORT** for the plant -(that eliminates Styrofoam); **AERATION**- (roots breath too!); **DRAINAGE**- (don't plug the holes in the pots!) and some **BUFFERING CAPACITY**- (ability to absorb excess salts).

Most plants will do equally well in pots or on plaques. I use volcanic rock! Of course I lived 23 years in Mexico under one. But I did start out with an expanded clay which was used in light weight concrete in the Everglades. It is similar to volcanic rock and I guess that is where I learned to handle it. I grow everything from Cymbidiums to Phals, Catts and most all species in it, no sweat! It is a lot better to me because it never breaks down and you don't have to repot until the plant outgrows the pot. In the case of many orchids, they grow very slowly and may stay up to 10 years in the same pot!

Look specifically at the many Mexican species and genera which you can grow easily in Southern California. They are numerous, so please feel free to email me any questions you may have after reviewing the list: I spend a lot of time at Rudvalis Orchids in Carlsbad, stop by for a visit!

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