

Orchid Basics – Part 1

Elements of Orchid Growing

**Water, Fertilizer, Light,
Temperature,
Humidity and Air Flow**

Section 1 - Water

Categorize Your Water Quality:

Water Type	Relative Amount of Alkalinity	Approximate TDS
1) RO/Rain	Very Low	< 60 PPM
2) TAP	Moderately Low	60 – 150 PPM
3) WELL-1	Moderately High	150 – 200 PPM
4) WELL -2	Very High	200 – 240+ PPM

TDS SHOULD BE NO MORE THAN 500-600 w/fertilizer

You can get a very rough estimate of your water quality by taking a sample to a pool supply store.

Another alternative is sending your water sample off to J.R. Peters (<http://everris.us.com/>). At a cost of about \$35. You can obtain a water analysis and then ask them to recommend a suitable fertilizer based on your actual water testing results.

Your water quality can vary greatly depending on its source.

Rainwater and Distilled Water – are sources of very pure water having a very low alkalinity, categorized as Type 1. These pure waters have virtually no buffering capacity so the addition of fertilizer can cause drops in pH and the water can end up with the acidity of vinegar. If you are using this type of pure water, you will need to use a fertilizer with calcium, magnesium and micronutrients because they are generally absent.

Public (Tap) Water Supplies – are sources of reasonably good quality water having a moderately low alkalinity, categorized as Type 2, though the total dissolved solids are higher as are the pH and sodium levels, which can be over the 60 PPM.

Well Water – is high in alkalinity and total dissolved solids, categorized as Type 3 or 4, naturally occurring calcium and magnesium may not be easily available to your orchids because the water is too alkaline.

Do not use salt softened water your orchids.

Soft water is extremely harmful for the orchid because salt deposits can build up in the potting medium.

This happens with hard water too, but the chemical build-up will be of other elements and not salt.

To get rid of this salt residue, you need to leach your orchid. This is where you run water (preferably, that is not soft water) through your orchid for a longer period, which is required to flush out the extra chemicals laying around.

Total dissolved solids (TDS) is a measure of the combined content of all inorganic and organic substances contained in a liquid. If your tap water is low in dissolved solids, it will be fine for use as irrigation water.

Adding fertilizer to water will drastically increase its amount of TDS; therefore, less fertilizer is required in water that already has high quantities of minerals in it. Flushing with water is very important when high TDS water is used in regular watering.

TDS SHOULD BE NO MORE THAN 500-600 w/fertilizer

Section 2 – Watering

Water sparingly. Most orchid varieties do not need to be watered every day. In fact, overwatering can cause an orchid's roots to rot and eventually die. Unlike many houseplants, orchids only need to be watered when they begin to dry out. Watering only when they are almost dry mimics an orchid's natural environment.

Some orchids have water-storing organs (pseudobulbs), and some do not. If you have a type of orchid that has the ability to store water, such as cattleyas or oncidiums, you should allow the orchid to completely dry out before watering. If you have a type of orchid that does not have water-storing organs, such as phalaenopsis or paphiopedilums, you should water the orchid before it is entirely dry.

For mounted plants, mist the plants daily (Multiple) or every other day in very humid conditions. Since plants in nature are subjected to nightly fog, it is fine to water in the afternoon or early evening.

For potted plants, knowing when to water is more challenging. Plants in moss should be just barely moist before watering again. If you have algae or green moss growing on top of your moss, you are probably keeping it too wet.

Consider your climate. The frequency with which you water orchids is affected by the level of humidity in your climate, as well as the amount of sun the orchid gets and the temperature of the air. Since these factors vary according to region and household, there is no rule for how

often to water an orchid. You will have to develop a routine catered to your specific environment.

- If the temperature is cooler, your orchid will need to be watered less frequently than when the temperature is warm.
- If the orchid is in a sunny spot, it will need to be watered more frequently than if you place it in a shadier spot.
- See if the potting mix looks dry. This is the first indication that it might be time to water the orchid. Orchid potting mix is usually composed of bark or moss, and if it looks dry and dusty, it might be time to water. However, just looking at the potting mix will not give you an accurate enough indication as to whether it is time to water.

1.

Lift the pot to check its weight. The pot will feel lighter when it is time to water the orchid. If it is heavy, that means there is still water in the pot. Over time, you will get a sense of how heavy the pot feels when the orchid needs water versus how heavy it feels when it still has moisture inside.

- A pot that still contains moisture might look different, too. If your orchid is in a clay pot, it will look darker when it is still wet. If it is light in color, it might be time for a watering.

Do a finger test - Stick your finger into the potting mix, taking care not to disturb the orchid's roots. If you do not feel any moisture, or you feel just a little, it is time to water the orchid. If you feel moist potting mix right away, give it more time. "When in doubt, dry it out". You should wait an extra day.

Section 3 - Fertilizer

Any Fertilizer is better than no Fertilizer

FEED WEEKLY, WEAKLY

Fertilize very lightly when plants are in active growth. Use a fertilizer formulated for your water type.

If fertilizing plants in moss, it is important to flush with water once a month. You may need to change the moss more than once a year.

Type 1 water - RO/Rain

Option 1

Peters Excel 13-2-13

Option 2

Peters Professional 17-3-17

Type 2 water - Tap/Municipal

Option 1

Peters Excel 15-5-15

Cal-Mag Special

Option 2

Peters Professional 17-3-17

Peat Lite Neutral Cal-Mag

Type 3 & 4 water - Well

Option 1

Professional 15-5-25

Peat Lite Flowering Crop Special

Option 2

Peters Professional 18-8-17

Peat Lite High Mag Special

Other	MSU Fertilizer - RO/Rain/Tap Water	13-3-15
Options	MSU Orchid Fertilizer - Well Water	19-4-23

Palmer Orchid Special - 14-2-14 Cal-Mag plus kelp

As a general rule,

Orchids can be fertilized once a month. However, better growers tend to feed weekly, weakly. This means they fertilize orchids on a weekly basis but use only a weak concentration of nutrients.

Feeding more often at a more dilute rate is better for orchid growth and health compared to fertilizing less but at a higher concentration.

FEEED DURING GROWING SEASON

Orchids go into a dormant state in the winter. Orchids go dormant and slowdown in growing.

Instead of fertilizing while they are dormant, get ready to fertilize them again come spring.

TDS SHOULD BE NO MORE THAN 500-600 w/fertilizer

If you have harder water (more TDS), you will get better results with a weaker solution of fertilizers.

In addition to fertilizer, orchids need Calcium and Magnesium Is it in your water?

Calcium is an essential element for plant growth that is often present in Irrigation water. It is required in large quantities by young growing tissues, strengthening stems and promoting strong overall plant growth.

— Low levels will lead to poorly developed younger leaves and buds.

Magnesium is an essential element for plant growth that is often present in Irrigation water.

— It is an important component of chlorophyll, the green pigment that is responsible for photosynthesis.



Section 4 - Light

Light Intensity	Foot-Candle	Lux
Intense	4000 - 5000	43056 - 53819
Very Bright	3000 - 4000	32291 - 43056
Bright	2000 - 3000	21528 - 32291
Low	1000 - 2000	10764 – 21528

Position your hand between your plant and the light source and about 12 inches from the leaves and observe the shadow from your hand.

If you can see no shadow, you probably do not have enough light for any orchid. If the shadow is fuzzy and faint (below left) to moderate your light level should be sufficient for *Phalaenopsis* and *Paphiopedilum* which require less light than most orchids.

If the shadow you see is sharp (below right), you most likely have sufficient light for all but the highest light-requiring orchids like *Cymbidiums*, *Vanda*'s and *Ascocenda*'s.



CATEGORY	FOOT CANDLES
Low Light	1000-2000
Medium Light	2000-3000
High Light	3000-4000

GENUS	LIGHT LEVEL
Cattleya	Medium to High
Cymbidium	Medium to High
Dendrobium	Medium to High
Miltonia	Low to Medium
Oncidium	Medium to High
Paphiopedilum	Low to Medium
Phalaenopsis	Low to Medium
Phragmipedium	Medium to High
Stanhopea	Medium to High
Vanda	Medium to High

A Light meter can be bought on Amazon for around \$20.00

Free app for you cell phone can also be used.

Plants need bright filtered sunlight.

If your growing area is in full sun, 70% shade cloth could provide the right amount of light.

A range of 2500 -3000 foot-candles would be about right.

If temperatures reach 90 plus degrees, it is best to provide more shade.



Section 5 - Temperature

Best daytime temperature is 70-80 degrees. Plants can tolerate temperatures over 90 degrees for short periods, however for extended periods of heat, they will experience some stress.

Again - If your growing area is in full sun, (70%) shade cloth could provide the right amount of light.

Orchids can handle Heat, and Orchids can handle Bright light. BUT NOT BOTH AT THE SAME TIME

Shade cloth goes on in the summer and off for the winter.

TEMPERATURE- Photosynthesis speeds up in relation to temperature. Orchids grow better in the summer.

Orchids become 'dormant' below 50 degrees and above 110 degrees.

Orchids are usually classified as either warm-, intermediate- or cool-growing depending on their temperature needs.

Warm 80-90F days and 65-70F nights

Intermediate 70-80F days and 55-65F nights

Cool 60-70F days and 50-55F nights.

The Need for a Day/Night Differential

Most of the orchids we grow do best under intermediate temperature conditions. Given adequate humidity and air movement, many will tolerate higher daytime temperatures than the ranges would indicate as long as they cool off at night. Night temperatures that are too warm or too cold are more often than not, much more damaging to plants than day temperatures.

Most orchids do best with a 10-15F fluctuation between day and night temperatures

Section 6 Humidity and Air Flow

60-70% relative humidity, if plants are mounted, or when roots are exposed. (More Watering)

If potted, plants can tolerate lower humidity levels.

With high humidity, gentle air movement around your plants is preferred.

What is adequate air movement?

The answer depends on humidity to a certain extent. In general, enough to cause GENTLE movement of thin foliage is about right.

Simply put, the higher your humidity, the higher your air movement should be. Air movement is beneficial to your orchids

