**New York Botanical Garden: Basic Orchid Care in Your Home**

The orchid family, *Orchidaceae*, is one of the largest of all flowering plant families, with plants growing in many different habitats.  Most orchids are epiphytes, which anchor and grow on other plants but do not have roots in the soil, or terrestrials, which do anchor and grow in soil.  There are two main growth habits of orchids: sympodial growth as exhibited in *Cattleya* and *Paphiopedilum*, and monopodial growth as displayed in *Phalaenopsis* and *Vanda*. Sympodial types produce creeping stems with storage organs (pseudobulbs) which give rise to leaves and flowers. Monopodial orchids have a main stem which grows upwards and produces flowers between the leaves at the leaf axils.

Since the mid-1800s, more than 100,000 orchid cultivars have been developed and orchids can be found to suit almost any growing condition.

Successful orchid culture is the result of imitating an orchid's natural habitat as closely as possible.  All orchids need appropriate light, temperature, humidity, soil moisture, nutrients, ventilation, potting medium, and maintenance. Here are some requirements for success:

**Light**

Before choosing an orchid, be sure to determine if it will grow favorably under your light conditions. Some flourish in subdued light, while others require more sun. Sources of light include natural sunlight and artificial illumination from incandescent or fluorescent fixtures. Light intensity is measured in units of foot-candles. With the use of a light meter you can directly measure the light exposure of the potential growing area. A bright, sunny day out of doors may measure 10,000 foot-candles, while a south-facing window may be about 5,000 foot-candles.

Orchids which have too little light will look lanky and not bloom properly, while those plants receiving too much direct sun will have sunburned foliage. *Vanda* and *Cattleya* have high light requirements: between 2,000 and 3,000 foot-candles. Low-light *Phalaenopsis* and *Paphiopedilum* grow well at around 1,000 foot-candles.

Artificial lights can be used to successfully grow orchids. A minimal system would include four 48-inch fluorescent tubes.  Two of these should be warm, which emits red light, and the other two cool, which emits blue light. You can also use four special plant-growing light tubes, which contain both the warm and the cool spectrum. Be sure the growing bench beneath the light fixtures is deep enough to place the orchids about 4 inches - 6 inches below the fixture.

**Temperature**

Most orchids need a distinct fluctuation between day and night temperatures to successfully produce flowers. In addition to measuring the light intensity at a potential growing location, it is practicable to measure the day/night temperatures with a thermometer. After you know these temperatures, you can choose an orchid which falls into one of the three most common classifications: high temperature, intermediate temperature, or low temperature.

Warm-growing orchids such as *Phalaenopsis* and *Vanda*prefer day temperatures between 75 and 85°F, with night temperatures between 65 and 70°F. Orchids such as *Cattleya, Dendrobium* and *Oncidium* prefer to be grown under intermediate temperatures, 66-75°F during the day and 55-65°F at night. Cool-growing orchids such as *Cymbidium* prefer night temperatures with lows around 50°F and day temperatures between 55 and 65°F. Many orchids grow comfortably in the intermediate range.

**Humidity**

Humidity in the air is just as necessary as moisture in the soil. A minimum of 40% relative humidity is required to grow most orchids, although some require higher humidity. In homes and apartments, both heating in winter and air conditioning in summer remove a lot of moisture from the air. Supply extra humidity with humidifiers, or group plants on a gravel-lined tray that is filled with water to increase air moisture through evaporation.

**Watering**

Orchids are killed more often by the common mistake of over-watering than anything else. Certain orchids like *Cattleya* and *Oncidium* need to be watered when the potting medium has almost dried out. Others such as *Dendrobium, Cymbidium* and *Paphiopedilum* like to have the medium kept evenly moist.

When it is time to water, place the plant in a sink and allow the water to soak through and drain out completely. It is best to use tepid water, as it will help to dissolve fertilizer salts and not shock the plants.

**Nutrients**

Since most orchid potting mediums are not composed of real garden soil, generally orchids flower best with bi-weekly feedings of dilute, water-soluble fertilizer. Remember to drench with plain water once a month.

**Ventilation**

The high humidity in tropical areas is often accompanied by gentle and constant air movement. Stagnant, humid air is as detrimental to orchids as are cold drafts. Air movement is essential, as it evaporates moisture on leaves and stems and helps protect plants from the spread of disease.

**Potting mediums**

Medium-size fir bark seems to be preferable for most commonly grown orchid plants, especially epiphytic orchids. Terrestrial orchids such as *Paphiopedilum* prefer finer bark mixes. Commercially prepared orchid potting mixes are typically a combination of coarse peat moss, redwood fiber, charcoal, and osmunda fiber or tree fern fiber. Be sure to use only quality orchid potting mixes and never substitute landscape mulches for orchid potting mediums.

**Maintenance**

With orchids, cleanliness is of great importance. Wash orchid leaves occasionally with soapy water to reduce the harmful effects of excess debris and minor insect infestation. Since orchids are susceptible to viral diseases, use gloves when handling them and/or wash hands often between handling. When cutting stems always use tools sterilized in a 10% bleach solution and/or alcohol, or use a clean, single-edged razor blade.

When orchids outgrow their pots, they should be be repotted. This is best accomplished every other year when new growth is beginning. Try to avoid transplanting in midwinter and in the heat of summer. Usually plants in bud and flower prefer not to be transplanted. It is important to remove as much of the old potting medium from the roots as possible by shaking or rinsing the roots under water. Any rotting roots need to be removed immediately with sterile tools. Orchids can be propagated by division at this time as well.

**Troubleshooting**

From time to time various symptoms appear on orchids which result from pests, diseases, and/or inadequate growing conditions. As with many houseplants, certain common pests can attack orchids. These include red spider mites, aphids, mealybugs, scale, and snails. These must be carefully monitored and removed with a cotton swab dipped in alcohol or sprayed with an appropriate insecticide.

Over-watering reduces air circulation around the roots, leading to dieback from root rot. If a plant looks off-color, yellow and weak, shake it out of the pot and check the roots for signs of root rot. Root color should be beige or white; black roots indicate rotting. Save the plant by removing the rotting roots, dividing and re-potting in fresh potting medium.

**Orchid selection**

For beginners, the orchid cultivars of *Phalaenopsis, Paphiopedilum* and *Cattleya* are relatively easy to grow. These have been selectively bred to be vigorous under indoor conditions.