**New York Botanical Gardens: Hard Cane Dendrobium**

The orchid family*, Orchidaceae,*is one of the largest of all flowering plant families, with plants growing in many different habitats*.*Successful orchid culture is the result of imitating an orchid's natural habitat as closely as possible.  All orchids need appropriate light, temperature, humidity, moisture, nutrients, ventilation, potting medium, and maintenance.

*Dendrobium* is a particularly large genus of more than a thousand, mostly epiphytic, deciduous or evergreen species originating in tropical to subtropical Asia, the Pacific and Australia. Encompassing warm-, intermediate- and cool-growing orchids, care requirements for *Dendrobium* are as diverse as their places of origin. The American Orchid Society divides *Dendrobium* into 41 Sections and many of the most popular*Dendrobium* to grow in the home are intersectional hybrids.

Hard cane *Dendrobium* include the Den. section Phalaenanthe and Den. section Spatulata (syn. Ceratobium) orchids as well as their hybrids. The Phalaenanthe section is named for the resemblance of the flowers to those of moth orchids while the Spatulata section are sometimes called antelope orchids. These profuse-blooming plants, derived from species from the hot, lowland, tropical forests of Asia, are some of the easiest *Dendrobium* to grow in the home, though light conditions in the northeast can be a challenge.

Hard cane *Dendrobium* have tall, narrow pseudobulbs, large showy flowers and dark, evergreen leaves. If conditions are right, they can bloom for a good part of the year. They are warmth, light and humidity loving orchids and while the care of this group is not entirely uniform, some general care parameters are summarized below.

**Light:**

Hard cane *Dendrobium* require extended, very bright light to remain vigorous and produce flowers, especially in summer when canes are forming. In the New York City area, a south-facing window with a shear, filtering curtain is often best or an east or west window with extended light.  If your orchid is floppy, the plant is probably not receiving adequate light.

With the use of a light meter, you can directly measure the light exposure of a 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.*Dendrobium* is considered a high-light orchid and requires anywhere from 2,000 to 5,000 foot-candles of light. The antelope-type need the most light.

LED artificial light can be used to supplement light for most orchids. Increase exposure gradually and be careful not to place the light too close and burn the plant. Look for a full-spectrum light option made for plants.

**Water and Humidity:**

Hard cane *Dendrobium* need generous water when actively growing and reduced water in the coldest months.  Day length, humidity and individual heat systems will affect the rate at which water evaporates from the growing medium. These orchids can need water several times a week during the hottest months and as little as every week to two weeks in winter. Use your finger to test near the fine roots before you water.

When it is time to water, place the plant in a sink and allow the water to soak through and drain out completely. Always water in the morning. It is best to use tepid water, as it will help to dissolve fertilizer salts and not shock the plants. Dab off any water that settles on the plant to avoid spotting of leaves.

Humidity in the air is just as necessary as moisture in the soil. A minimum of 40% relative humidity is required to grow hard cane *Dendrobium*whereas an average home in the northeast will have humidity as low as 25%. 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. You can use a simple hygrometer to assess the humidity and keep it in the 50+% range that *Dendrobium* prefer.

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

**Temperature:**

Most orchids need a distinct fluctuation between day and night temperatures to successfully produce flowers. Warm-growing orchids such as hard cane*Dendrobium* prefer day temperatures between 70 and 85°F, with night temperatures between 60 and 70°F.  If exposed to even a brief drop in temperature below 60°F, a hard cane*Dendrobium* can drop its leaves. A brief and gentle lowering of temperature to the bottom end of the range can aid in producing buds.

**Nutrition:**

Since orchid potting mediums are not composed of nutritious garden soil, the rule of thumb for orchid feeding is "feed weakly, weekly". Hard cane *Dendrobium* has a greater need for nutritional supplementation than most orchids. A balanced, powdered fertilizer (20-20-20) is best at ½ of the recommended strength on the label, every other time you water. Reduce frequency in the winter and for older, slower-growing plants.

**Encouraging Flowering:**

An orchid needs to have all its requirements met to generate the energy necessary to flower. Adequate light, careful watering, and proper temperature and humidity levels all contribute to a flowering hard cane*Dendrobium*. In nature, orchids experience a 10ºF. temperature difference between day and night. This differential is important when trying to initiate flowering. *Dendrobium*'s needs are somewhat extreme and humidity, temperature, nutrition and water that are off the mark may prevent yourhard cane*Dendrobium* from flowering. A brief and gentle lowering of temperature within its preferred range can help the plant to produce buds. Restricting water and fertilizer in the winter months (reduce by about 20 to 30%) will help trigger flowering. Keep your *Dendrobium*'s container relatively tight around its small roots for best flowering.

**Re-potting:**

When the potting medium has deteriorated, hard cane *Dendrobium* should be repotted. A fast-draining potting medium is essential but both bark and sphagnum orchid mixes are fine. Many plants prefer growing in a tight spot and keeping the container relatively small while changing out the growing medium will support a healthy root system.  Any rotting roots need to be removed immediately with sterile tools. If you are reusing a container, clean it thoroughly when you re-pot.

**Hygiene:**

Cleanliness is important for orchids. Wash orchid leaves occasionally 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 (1 part bleach to 9 parts water) and/or alcohol, or use a clean, single-edged razor blade.

**What to watch for:**

Exposure to cool temperatures will cause**leaves to drop rapidly**. Keep these orchids above 60°F. If they are chilled and the leaves fall off, resume warm conditions and leaves will grow back once the orchid returns to active growth.

**Leaves that pleat or do not unfold** properly often indicate damaged roots from growing medium that does not drain well enough. Repot your plant in fresh growing medium, removing damaged roots and disinfecting with fungicide.

**Black spots can develop on leaves** when cold water is splattered on them. Dab off any water that settles on the plant to avoid spotting of leaves.