

Dendrobium Hybrid Culture **'Nobile' type Dendrobium Hybrids Only**

Dendrobium is a genus of orchids with over 1000 different species from several continents and many different growing areas. These cultural instructions apply only to the sub-group that come from Asia. They are all related to, and are best represented by the species *Dendrobium nobile*.

Dendrobium nobile and its relatives are Asiatic orchids native to Burma, India, Thailand, and Indochina, where they grow on trees from the lowlands all the way up to the cool highlands of the Himalayas at elevations of 4,000 feet or possibly even higher. The species are extremely hardy, surviving temperatures ranging from warm to downright hot as well as enduring freezing temperatures in some locales. If kept dry, these species and hybrids will survive winter temperatures of 33-39 F (3-4 C) and will flower around April. Unfortunately the high elevation origin of some of the species has given the group a label as being difficult to grow. The hybrids being sold today are not at all like the wild species. The requirement for a "cold treatment" has been bred out of them. The modern hybrids now can be bloomed in any home environment if one can get a brief period of 55 F to 60F at night in autumn or early winter. So try growing this new group of *Dendrobium* hybrids, and you will be rewarded with flowers every spring for years to come.

If you bought your plant in bloom, show it off, best to keep it in bright shade at normal household temperatures. Water no more than once a week. Once the flowers drop, then it is time to get growing.

First the growing basics:

Light and Air: Provide plenty of light to flowering-size plants. As long as there is good air circulation, they can be grown without shade even in summer. (yes, as much light as a tomato in the garden) In Hawaii, plants are grown under full sun (no shading) with good results. If air circulation is poor, about 30-40% shade should be provided in July and August to prevent leaf burn. In any case, full sun year round is preferred. Indoor, remember a pane of glass between the orchid and the sun cuts out about 35 to 40% of the light. So indoors a south exposure is best. If a backyard or deck is available, summer the plants outdoors, on a table or in a hanging basket so that they are off the ground to avoid slugs, earwigs and other crawling pests. Put outdoors after danger of frost is over, bring indoors before first frost in autumn. Trick: Ever notice how hot a plastic pot gets in the sun? Place the plant in the plastic pot into a slightly wider, slightly deeper terra cotta pot, or basket or cache pot, or other ornamental container. Leave the space empty between the inner pot and the outer pot, this will provide the insulation. Now when the sun hits the outer terra cotta pot, the terra cotta shades the plastic pot, the air space stops the heat from transferring inward, this allows you to have full sun on the leaves and keep the roots at root temperature.

Water: Municipal water, well water, RO, DI & rain water are all okay to use on your *Dendrobium*. Do not water with 'softened water' if the water softener is the type that is charged with salt. This will in time kill your plants. Ordinary "Lake Michigan" tap water is fine. *Dendrobium nobile* hybrids want a lot of water from the end of flowering, Spring, through the middle of Autumn. Roughly 10 months per year they do not want to dry out between watering. The surface of most potting media can feel dry even when quite wet deeper in the pot. Use your finger (the best moisture meter ever invented) work your finger into the media at least as deep as the first knuckle (deeper than fingernail deep). If it feels wet, no water needed. If it feels barely damp, it is time to water. If it feels dry, you should have watered yesterday. After a while you will be able to determine moisture level by the heft, or weight of the pot, a dry pot is light, a wet pot is heavy. For a bark mix I would expect the need for water to be every day to 5 days in warm summer weather. In full sun they can dry out quick. In cooler weather every 5 to 7 days

is not unusual.

Fertilizer: There are many types of orchid fertilizers, some are better than others. Highly recommended are the MSU formulations, and the low potassium version of MSU formulation known as “K-Lite”, or “Hydro Your Own Complete”. Begin applying fertilizer at the 1/2 teaspoon per gallon rate for “Hydro Your Own Complete” or “K-Lite” as soon as flowering has finished. Other brands of fertilizer adjust the dose to yield roughly 75 to 100 ppm as Nitrogen in the solution. Water your plant normally, then splash on a good amount of your fertilizer solution. Stop fertilizer after July 31. The most common cause of poor flowering in this type of Dendrobium is excess fertilizer during the flower bud formation phase. For flowering-size plants, it is important to stop application of any fertilizer in the first part of August. Slow-releasing fertilizers in pellets (e.g., Osmocote) are not good for flowering-size plants. Remember, NO FERTILIZER AFTER JULY 31. Resume fertilizer after the plant has finished blooming. This is easy, you really only fertilize for an average of 5 months out of the year.

Potting Media: Fir bark, sphagnum moss, coconut husk chips, perlite and other media appropriate for Cattleya orchids can be used for nobile-type dendrobiums. A mix of 2 parts fir bark, 1 part coconut husk chips, one part sponge rock or coarse perlite and ½ part horticultural charcoal is my personal preferred mix. Some growers use a mix of 3 parts perlite, 1 part vermiculite, and 1 part peat moss, sifted over window screen to remove fines. Any slightly acid medium (pH 5 to 6.5) which drains well but still retains some moisture is ideal. Clay pots are recommended for sphagnum moss or media that retains moisture. For media that drains well, plastic or polyethylene pots are recommended. Plants in plastic pots will be more stable if slipped inside a slightly larger empty clay pot. The weight of the clay pot will prevent the plant from tipping over. In addition, the outer pot will prevent the sun from heating up the plastic, which could result in overheating the roots. This way, sun can shine on the leaves, and the roots will stay at ambient temperature.

Repotting: Overgrown or large plants that have finished flowering should be repotted. This should be done only when night temperatures remain above 55 F (13 C), best done in spring. To repot, remove decayed potting medium and discolored, black, or decayed roots by washing them with water. Be careful not to damage the live roots. Repot into the smallest sized container that will hold the roots. If the root ball has decreased due to removal of decayed roots, pot the plant into a smaller size container. Dendrobium like to be root bound. Wind loose roots around the root ball, rather than letting the root system spread out.

Appropriate **pot sizes** are as follows: For a small plant up to 4” tall, a 2-1/2” pot is good; for a plant 5” to 1 foot tall, a 3” pot is adequate, and for a plant over one foot tall, a 4” pot is fine. Overpotting is not good for growth of small plants. These hybrids perform best when they appear “pot bound”.

Plants with more than 7 or 8 canes can be divided but it is not necessary. If healthy plants with only 4 or 5 canes are divided, the following year’s growth will be poor. Transplanting small or medium-size plants that have finished flowering should be done only when the pot has become too small to support the height of the canes. The best time for planting or transplanting is when new shoots grow to about 4-6 inches. The roots from the new shoots should take to the media very well. Plants should not be replanted when no new shoots are growing, or plant has stopped growing.

From spring to early summer, offshoots (keikis) may appear on the upper nodes of canes due to damage of the new flower buds, mechanical damage or chewing by insects or slugs. The offshoots that appear in spring will produce thick canes and mature during the summer. When the roots of the off shoot are 3 to 3-1/2” (7-10 cm) long, the offshoot can be removed from the cane. Soak the offshoot in water to soften the roots and plant it in a small pot. If bottom main shoots and keikis appear simultaneously, pluck off keikis to make main shoots grow stronger.

Temperature: During the growing season, *Dendrobium nobile* hybrids like a classic Midwestern summer, that is hot, sunny and humid in the day, a bit cooler at night and rain (watering) frequently enough that they never dry out completely. Daytime temperatures between 65 F and 95 F are acceptable, when heat soars to over 100 F, move the plants to a shady location. Night time temperatures should be 10 or more degrees cooler than daytime. This all changes for the 8 to 12 weeks when we try to set the flower buds in the Autumn.

Initiating Flower Buds in Autumn, “Setting the flower buds”: Flower buds are initiated by 2 environmental factors, lower temperature combined with a dry season. Of the two, the dry season needs to be longer than the period of lower temperatures. When the tops of new canes (pseudobulbs) become rounded off, they are mature, ready for flower initiation. Reduce watering at this time. Allow plants to become completely dry between watering. Allow them to be completely dry for at least 5 days before watering. Generally reduce water beginning sometime in October. Continue to keep them fairly dry until you see the new flower buds begin to separate from the canes. This is usually middle of December, then you can increase watering frequency, but allow at least a day or more of complete dryness between watering until after the flowers have begun opening. Then resume watering. Larger, mature plants with many growths respond well to just totally stopping water. I leave mine bone dry from end of October until sometime near Christmas when the flower buds begin to show. Then I water once every 2 weeks until flowers start opening. Smaller plants do better with a occasional water as above.

For differentiation of flower buds, it is important to expose plants to lower temperatures. Canes (pseudobulbs) which grew from early spring through summer and have matured in the fall require approximately one to two months of lower night temperatures. Therefore, in the autumn when it becomes cool, do not rush to bring your plants into the greenhouse or home, as with cattleyas. Leave them outside to cool, and they will bloom much better. On the windowsill often cool air will come off the window pane glass at night. This may be enough to give the plants the cooling they need. Under lights growers may have to move the location of their plant to a cooler spot for flower bud initiation. Technically after canes have completely matured (when tips of cane become round and hard) expose plants to temperatures below 57 F (14 C) for 25 nights with a minimum each night of one hour at or below 57 F. After this chill, flower buds will be initiated and plants will bloom within 50 days if kept at temperatures above 60F (18 C) at night and 77 - 82 F (25-28 C) during the day. If the temperature is kept lower, plants will flower later.

Hint for Midwest growers, Chicago area, Milwaukee, southern Wisconsin. The temperature requirements sound complicated, the easy solution is to summer your plant outdoors. The weather normally cools off at night the right amount beginning in September, right on schedule. Grow the plants outdoors, in full sun all summer, bring into the home when the temperatures start to fall into the low 40's. Do not allow them to experience a frost. Frost won't kill the plant, but it will damage flower buds. When you bring the *Dendrobiums* indoors, usually middle or late October, don't water the plant at all until after Thanksgiving, I usually wait until almost Christmas. This will only be a 30 to 60 day dry spell. By Christmas, you should see flower buds developing. At this time you can begin watering. Indoors, while waiting for the flower buds to open, keep the plant in the brightest window possible. They need the sun for the flower buds to develop.

When in full bloom, flowers will last longer if the plant is placed in a cool, dry spot away from any draft and out of direct sunlight. Normal household temperatures are acceptable, won't harm the plant, individual flowers will last 3 to 4 weeks. Usually there is a succession of buds developing, so the 'show' will last a long time. Water the plant enough to moisten the medium about once every week.

Summary & Hints:

1. Provide plenty of light. High light gives better growth and more flowers. In the rapid growing phase of early summer, they need as much light as a garden tomato plant. Full Sun.

2. Provide good air circulation. As long as you have breezes or good air circulation, you can prevent leaf burn even when plants are grown in strong light. Growth will be excellent.

3. Do not fertilize too much, or too late in the growth cycle. NO fertilizer after August 1st. The most common cause of poor flowering or production of off shoots is too much fertilizer. Slow release fertilizer is not good for flowering size plants. In nature, nobiles attain full size every year without supplemental fertilizer.

4. Provide proper temperature and reduced or water for flower bud development. By controlling the temperature, you can control flowering. After canes have completely matured (when tips of cane become round and hard) expose plants to temperatures below 57 F (14 C) for a minimum of 25 nights, each night with a minimum of 57 F for one hour or more. Flower buds will be initiated and plants will bloom within 50 to 60 days if kept at temperatures above 60 F at night and 77 - 82 F (25-28 C) during the day. It is not a problem if the temperature is kept lower, plants will simply flower later.

- end of May to end of July - Summer your plant outdoors in Full Sun. Water Heavily. Fertilize regularly. This is the rapid growth phase.
- August. Stop Fertilizer. No fertilizer at all after August 1. Continue with regular watering.
- September and October is the cooling off that initiates flower buds, don't water when the temperatures are under 65 F. Bring indoors before temperatures drop below 38 F.
- end of October, all of November - bright sunny window, NO WATER. Ok, if you can't stand the thought, give it just a little water, but not more than once every 2 weeks. Begin once a week watering once flower buds have developed enough that they are clearly visible. This is usually December. Continue with once a week watering until flower begin to open. Then water whenever the potting mix gets dry. Flowers should be on the plant for at least 2 months, maybe longer.
- After flowers fall off - the growth cycle begins anew. Place plant in brightest, sunny location possible. Water heavily, fertilize regularly. When danger of frost has past, move the plant outside to a sunny location in the garden.

Once your Dendrobium is in bloom, show it off, use it as a centerpiece for you dinning room table, show it off at the office. Put it on display. Enjoy the fruits of your labor. Job well done.

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