



St. Augustine Orchid Society

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Caring for Orchids During Cold Weather Orchid Alert

Courtesy of Dr. Martin Motes, Motes Orchids

Cold Temperatures Can Start to Occur in December

(Excerpted from Florida Orchid Growing: Month by Month page 113, all rights reserved)

December can be cold. Frost has occurred in the first week of the month and unforgettably, the coldest temperatures ever recorded in South Florida were registered on December 25, 1989. If you haven't taken some of the precautions outlined in the November chapter, get busy! Keep a close eye on the forecasts during this volatile month. Remember that hard cane dendrobiums of the sections *Spatulata* and *Phalaenanthe* are the most sensitive of commonly cultivated orchids. They resent temperature much below 60 degrees F. *Phalaenopsis* are next most sensitive, then vandas. Protect all these genera more carefully.

Cold Temperature Tolerance of Different Orchids

(Excerpted from Florida Orchid Growing: Month by Month pages 117-120, all rights reserved)

One major obstacle for neophyte growers is in understanding the diversity of cultural requirements of various genera of orchids. Orchids are such a vast group of plants which have succeeded in nearly every conceivable habitat on earth, that knowledge of a specific genus's cultural requirements, rather than a general knowledge of what "orchids" like, is necessary to successfully cultivate the various types. Most cultivated orchids come from tropical regions but differences in elevation and other geographic features of their native habits can mean dramatic differences in the response of orchids to various external conditions. Most emphatically these differences can be seen in different genera's toleration of cold. While some orchids are native to regions where frost is more the norm than the exception, others are hyper-tropical plants for whom 50° F (10° C) is far too cool. Knowing which is which is essential in a mixed collection of orchids. A great irony for beginners is to discover that their extra nurturing efforts to protect certain orchids have in fact done more harm than good.

- ✿ **Dendrobiums** are among the most confusing for new orchid growers. This huge genus, well over a thousand species divided usually into 15 sections, ranges over nearly a quarter of the planet. Found from western Indian all the way to Micronesia, dendrobiums inhabit an incredible variety of ecological niches. Ironically, the two sections most common in horticulture are diametrically opposite in cold tolerance.
- ✿ Section *Dendrobium*, the soft bulb or "*nobile* types" whether in their pendulous forms like *D. anosum* and *aphyllum* or in the upright types like *D. nobile* and its hybrids, positively relish the cold. Temperatures right down to frost are the best culture to produce the most prolific blooming of these plants. Without cold and drought stress in winter these plants will retain their leaves and produce an abundance of vegetative growths but few if any flowers. Stressed by cold and dried out properly these plants lose all their leaves and in spring the bare bulbs



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are covered in flowers.

- ✦ The opposite is true for the "hard cane" dendrobiums of sections *Spatulata* and *Phalaenanthus*. Loss of leaf on *D. phalaenopsis* types is usually indicative that they have suffered from too much cold. Temperatures below 60° F (15° C) can produce this undesirable effect. *D. phalaenopsis* and evergreen types should receive the maximum cold protection.
- ✦ Other sections of the genus have slightly different tolerances. Section *Callista*, *D. farmerii*, *D. lindleyii* (*aggregatum*) and their relatives can take temperatures nearly as low as the *nobile* types and will bloom all the better for exposure to temperatures in the 30s (3-5° C). Section *Formosae*, *D. formosum*, *D. infundibulum* and the new hybrids prefer slightly warmer conditions but are quite happy with temperatures in the 40s (6-9° C). Other sections of *Dendrobium* in cultivation such as *Pedilonum*, *Latouria*, and the Australian hybrids of section *Dendrocome* have slightly different requirements and those growing these more "exotic" will succeed best in researching them. Try B. Lavarack *et al.* *Dendrobium and its Relatives*, Timber Press.
- ✦ After the cold sensitive "hard cane" dendrobiums, ***Phalaenopsis*** are the most tender of commonly grown orchids. *Phalaenopsis* will be strongly induced to bloom by temperatures in the mid 50s (12-13° C). A few exposures to temperatures below 60° F (15° C) will produce the desired spikes and thereafter the plants will be happiest if they are kept above 60. One or two nights down to 50 or slightly below will do little harm but are to be avoided in the best kept collection.
- ✦ **Vandas** come next on the scale of sensitivity. Like *Phalaenopsis* they are stimulated to bloom with sharp drops of temperature into the 50s at night, especially when the temperature can be induced to climb into the 80s (27-32° C) by day. Vandas will tolerate brief excursions into the upper 40s but are best kept above 50 degrees. Temperatures below 50 for very long or very often will produce the tinkling sound of falling *Vanda* leaves, turning the plants into palm trees.
- ✦ **Oncidiums** of the "mule ear" type with thick fleshy leaves (*O. luridum*, *lanceanum* etc.) have warmth requirements similar to vandas. The thinner leaved *Oncidinae* will usually take temperatures into the 40s with aplomb. Many of the hybrids in this group have been bred to *Miltoniopsis* and to *Odontoglossum* to increase their cold tolerance. A caution with this group is the ability of wind to strip heat rapidly from their thin leaves. The cold tolerance of these will be much greater in still air.
- ✦ With the exception of some species of Amazonian origin like *Cattleya violacea*, most **cattleyas** can take quite cool temperatures. Most growers have few concerns for them even in temperatures down to the upper 40s (8-9° C). They must, however be protected from both frost and freeze. Be extra cautious on those clear still nights when the temperature drops to the 30s (3-4° C).



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- ✦ In addition to the cold loving *nobile* dendrobiums, certain **other genera** from the high Himalayas such as deciduous *Calanthe* and *Cymbidium* species and hybrids, actual require quite cold temperatures to stimulate them to their best bloom. Even "warm growing, temperature tolerant" hybrid cymbidiums flower best when chilled repeatedly into the low 30s.

All orchids tolerate cold best when they have proper nutrition. Avoid too much nitrogen which might stimulate too soft of growth and increase the dosage and frequency of application of both magnesium and potassium in colder weather.

Use of Water to Protect Plants

(Excerpted from Florida Orchid Growing: Month by Month pages 59-60, all rights reserved)

Water is the only feasible source of heat available to plants grown in the open, under trees, in shade houses or on patios in South Florida. Ground water here (and in most of the rest of the world is about 63° F (16° C). Water out of municipal systems is not far different. On truly cold nights turning on the water can be of great benefit to our plants, provided that they have not been over-watered in the days and weeks preceding, thus inviting the ever present fungi to do more damage than the cold. For this reason as well, in general, orchids are better off dry until temperatures approach frost or freezing. The logic for maintaining plants dry is not only to minimize fungal problems but also because cold air is typically very dry air.

- ✦ If plants are wet in very dry and rapidly moving air say 10 or more mph, evaporative cooling can take place, chilling our orchids further and faster than they would if dry. When the water goes on it needs to be in heavy volume and it needs to stay on to keep the plants thoroughly bathed in its warmth.
- ✦ Very still air on the other hand, presents a different danger as frost is possible at temperatures higher than is commonly realized. In calm air frost can form at higher elevations and settle in on plants while the surface temperature is only in the upper 30s (4° C).

The best forecast for nights when the temperature will hover near 40 is a light wind of 2-5 miles per hour. This light wind mixes the warm air near the surface and draws warmth from the earth. Clear, cloudless, still nights with bright shining stars elevate the spirit but harbingers frost.

Forecasts of Temperatures Below 40° F Should Stimulate Us to Action. If it is not practical to bring all the phalaenopsis, vandas and hard cane dendrobiums into the house or garage, think of using water to help protect them.

- ✦ Shade cloth or even patio screen like a lacy Mantilla holds in a surprising amount of



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heat.

- ✿ Under screen, a fine mist head (½ gallon per minute) attached to a hose and left running beneath the bench or plant rack will provide several degrees of additional warmth that will often sufficiently temper the chill and ward off any light frost settling in.
- ✿ Growers with swimming pools frequently turn on the recirculating pump to keep a supply of warm water near the pool's surface where it can add heat to the ambient environment. A few degrees of warmth frequently make all the difference to our sensitive orchids.
- ✿ In more open areas not protected by a permanent irrigation system, an oscillating sprinkler at the end of a garden hose is very effective. These are readily available at Home Depot and garden shops for a few dollars. On frosty nights, start the water at bedtime and let it run until the sun is up. The extra water once or twice in a month will do no harm to orchids that have been properly and judiciously watered the remainder of the month. In fact, these occasions present the opportunity to be sure that excess fertilizer salts have been leached from the pots and medium. A good work can be borne of necessity!

Remember that Himalayan dendrobiums and "warm growing" Cymbidium hybrids will positively relish temperatures down to 32° F and a light frost is just the ticket for great bloom. Keep the water off these!

Cold Watch – Understanding the Weather Patterns

(Excerpted from Florida Orchid Growing: Month by Month pages 61-64, all rights reserved)

As cold is a major theme of this month, a review of some factors effecting temperatures in South Florida should be particularly valuable to new comers in the wide world of orchid growing. While we bask in the warm glow of a tourist board's vision of winter (made all the warmer by thoughts of our envious friends and relatives stuck in the northern snow and ice), we should be mindful that January can produce quite severe cold. The majority of hard freezes in Florida take place in January, but even short of that catastrophe, the month usually brings the coldest weather of the year. We need to keep a sharp eye on the weather reports while remembering that in our almost island of Florida a number of factors influence the severity of the cold which will impact us.

First, the shape of the cold front interacting with the shape of the peninsula is of immense importance. The weather that delights the tourist board and all of us while plunging most of the US into the throes of ice and snow usually results from particularly large, slow-moving masses of cold air that have spread across much of the continent before reaching Florida.



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Large broad masses of cold air that seep downward over a broad front also cover the Gulf of Mexico and the eastern Atlantic as they progress southward. These tempering bodies of water bathe the cold to merely refreshingly brisk temperatures. More dangerous to our plants are the smaller, tighter, fast-moving fronts which plunge like a dagger of cold straight down the peninsula to the tropical heart of South Florida. Such fronts typically spawn the freezes and severe plant-damaging cold that is of the greatest concern to orchidists and other plant people. These Siberian Express fronts bring winds out of the Northwest that are uninfluenced by the benign, protective bodies of water flanking the peninsula as they drive down the central landmass of Florida. When the winds from an approaching front start out from the southwest and move gradually to the northwest and then quickly to the north and northeast, we can expect cold nights and warm days that reasonably well-protected orchids not only tolerate but in some case actually relish. The more savage fast moving fronts where winds start in the Northwest and stay there are the ones to send us thinking of moving plants or providing additional heat.

Wind direction is always critical in South Florida. Because of the peninsula's decided eastward cant, winds from the north in much of South Florida are in fact relatively mild. North winds here are blowing across the warm Gulf Stream. The first shift to the northeast absolutely spells relief as the warm Atlantic has absorbed the cold.

Wind speed is also important. Strong winds at low temperatures chill our plants more rapidly, exposing them to additional hours of chilling. "Wind chill factor" has no relevance to plants until the actual air temperature drops to a level unacceptable to the plant. After that, the more rapidly the plant itself's temperature falls to that damaging level and the longer it stays there the worse the case. Wind speed enters the equation only if the final low temperature is below our plants' tolerance. Wind breaks of vegetation or manmade are always to be sought. Native epiphytic orchids hide out in the most protected hammocks and sloughs. We can learn from them.

Dead, still air looms with another threat: radiational cooling which can allow frost generated at higher levels of the atmosphere to settle in on our plants even when the air at the surface is only in the upper 30s. These frosts typically occur when the front has passed leaving such low humidity that there is no moisture in the air to retain ground heat which radiates quickly into the cold reaches of space. Light winds of 2-5 miles an hour are our friends on these nights. Lightly moving air stirs additional heat from the ground and keeps the colder upper air from settling in.

Relative humidity also has a profound effect on temperatures. Dry, clear air allows heat to radiate out into space. Those bright starry nights are beautiful but as Good King Wenceslas knew they are not necessarily our comforters. The best measure of the dryness of the air relative to cold is the dew point. When water vapor is wrung from the air an incredible amount of energy is released and the heat of transformation raises the air temperature a degree or two. Because of this phenomenon, the dew point is usually the



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closest measure of the coldest temperature that will be reached in the night. Particularly on still clear nights it should be monitored closely.

Wind direction, wind speed, dew point - where does one find these on a chilly night? At the Florida Agricultural Weather Network (FAWN), a system of automated weather monitoring stations, as close as your computer. There will be a station near you. There are also several at points north of the nearest location that give data on conditions that are effecting areas through which the cold front is moving toward us. FAWN is updated every 15 minutes at <http://fawn.ifas.ufl.edu>. Bookmark it for something other than worrying to do on those cold nights.

For more expert advice like this, [click here to get your own copy of Florida Orchid Growing: Month by Month.](#)