

THE CULTURE OF ODONTOGLOSSUMS AND RELATED GENERA

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There is an Inverse Relationship between a Plant's Desirability and its Willingness to Grow

TODAY ODONTOGLOSSUM ENTHUSIASTS benefit from a long history of interest and experience in cultivating odontoglossums and related genera in Europe, particularly in England, dating back to the late 1800s. The exotic beauty of these amazing plants captivated growers during those early days when enthusiasts largely indentified and perfected the optimum cultural requirements for them. Early photographs from the turn of the 20th century illustrate greenhouses full of well-grown and flowered plants cultivated to perfection. Now, some one hundred years later, the number of people successfully growing odontoglossums has declined. This is perhaps due to a general perception that these plants are difficult to grow and to a valid concern about providing the required lower temperatures. A few avid growers in the warmer areas of the United States, willing to go to the extra effort and expense to cool their growing areas, do succeed in producing beautifully grown plants. It is easier, however, to grow them in cooler coastal areas.

Odontoglossum species grow in cool, moist cloud forests at middle to high elevations with the majority of the species ranging from about 5800 ft. (1800 m) to 9700 ft. (3000 m) throughout the Andes of South America. Variations in climatic requirements among the species are usually slight and largely based on the temperatures found at different elevations. Cultural requirements are generally the same for *Odontoglossum* hybrids and most multigeneric hybrids such as odontodas, odontonias, and vuylstekearas. *Odontocidium*s, wilsonaras, and other multi-generics often tolerate slightly warmer temperatures.

A successful odontoglossum grower will provide medium to fairly bright light intensities, temperatures in the cooler range, plentiful water of high quality, high humidity, good air movement, adequate nutrition, and an open, fast draining potting medium that is never allowed to totally dry out.

This article provides cultural guidelines for those interested in growing odontoglossums to their maximal potential.

Light

In their natural environment, odontoglossums often grow epiphytically at the forest edge exposed to bright light moderated by irregular, but frequent, cloud cover.

For greenhouse growing, shade cloth or whitewash is essential to filter and diffuse natural light, and to provide appropriate light levels, as well as to moderate temperatures. Light levels in the range of 1,800 to 2,500 foot-candles seem to work well for most growers; in many areas, this corresponds to reducing light transmission by 40 to 50 percent. The brighter the light, the better the plant will grow as long as the leaves do not overheat. Strong air movement helps to reduce temperatures on leaf surfaces under higher light conditions. Plants grown under insufficient light often appear stunted and have soft, weak foliage, which is more vulnerable to disease. According to some growers, ideal light levels are reached when plant leaves just begin to show a slight bronzing. I see the best plant growth here in my greenhouse (coastal Pacific Northwest, close to the ocean) when daytime temperatures are less than 70°F (21°C) and light levels are slightly above 2,500 foot-candles—which is difficult to accomplish in warmer climates.

Temperature

Average temperatures over 24 hours in the natural habitat for a number of these species range from the mid-40s (7°C) to the mid-70s (24°C), with minor variations from season to season and species to species. When in cultivation, I recommend maximum daytime temperatures of 70° to 75°F (21°-24°C) year-round. Plants will tolerate short periods of warmer day temperatures into the low 80s (27°C), especially if good humidity and air movement are provided. Optimum night temperatures of about 50°F (10°C) are recommended with a diurnal range of at least 10°. Night temperatures dipping into the lower 40s (4°C) will not harm the plants, although their growth may be slowed. Cool night temperatures are essential for success with odontoglossums. Species often will tolerate much cooler temperatures than the hybrids, with a few high elevation examples such as *auropurpureum* and *revolutum* occasionally falling into the high 30s (3°C) for short periods. On a few occasions, the winter night temperatures in my greenhouse dropped into the high 30s (3°C) when my heater went out, and the plants (both species and hybrids) suffered no harm.

A few people have successfully cultivated odontoglossums in what we might consider “warmer” climates, including the late Robert Dugger, the “guru” of North American odontoglossum growers. Bob Dugger lived, grew, and hybridized his impressive plants in Solana Beach, north of San Diego, along the California coast. Temperatures there range from lows in the mid 40s (7°C) to highs of 82°F (28°C) and average 55°F



Odm. Alliance Secretary John Miller standing with Bob Hamilton's *Wilsonara* Matoaka Road 'Reina del Mar'. Odontoglossums and intergeneric hybrids can produce robust plants and inflorescences when properly grown.



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Ideal light levels are reached when plant leaves just begin to show a slight bronzing. Grown at Ecuagenera, Gualaceo, Ecuador.

(13°C) to 72°F (22°C). His method was to “blow the door off” his greenhouse by using high capacity evaporative coolers that supplied a tremendous flow of humidified and cooled air. Visitors commented that when the swamp coolers were operating, the higher pressure inside his greenhouse would force people to keep a good grip on the door as it forcefully blew open into their faces upon entry.

Water

In their natural habitat, odontoglossums receive rainfall throughout the year and do not have a significant rest period. In cultivation, these plants need water in plentiful amounts when in active growth, as well as perfect drainage. Allow the potting medium just to begin to dry out before watering. Depending on your climate, this might mean watering once a week or even more frequently. During the winter months in the Pacific Northwest, particularly near the ocean, winter rainfall and high humidity can mean not watering for several weeks at a stretch. Weather conditions in my area have occasionally forced me to go as long as a month without watering. Accordion pleating on leaves can result from insufficient water or humidity.

Odontoglossums are particularly sensitive to water that is relatively high in dissolved minerals (as compared with distilled or rain water, for example). Poor

quality water may damage or kill roots and cause leaf-tip burn. Some municipal water is easily capable of killing odontoglossums in short order. Pure water of less than 100 ppm/tds (parts per million/total dissolved solids) and 6.0 to 6.7pH is desirable, if not essential, for plants to grow well. Reverse osmosis or deionized water is essential for growing odontoglossums in southern California because municipal water is largely drawn from the Colorado River and occasionally runs as high as 700 ppm/tds, a concentration guaranteed to kill your plants.

Humidity

In the wild, many odontoglossums live in cloud forests where moisture in the form of condensation and dew is always available. In order to mirror these conditions, I aim for humidity levels between 50 and 80 percent, along with actively moving air. Evaporative cooling in a greenhouse increases humidity while cooling the air and is highly recommended for these orchids in most climates. Fogging the air with a fine mist or dampening the floor with water also helps to humidify and keep temperatures cooler.

Growers attempting odontoglossums in warmer climates with high humidity may well have a difficult time with these plants, though some have achieved success.



Perforated plastic pots, designed for water lily culture, work well with larger plants and provide optimum drainage and air circulation with larger volumes of potting media.



Styrofoam® and sphagnum moss mix used by Poul Hanson of Victoria Island, British Columbia



Miltonia hybrid grown in Styrofoam® and sphagnum moss.

Fertilizer

From conversations with other growers, it seems that each uses a different fertilizer and applies it differently; some apply the fertilizers at every watering and others every other week. Fertilizer application should coincide with periods of active plant growth. If the weather is overcast and light levels are low, application once a month is sufficient. Odontoglossums benefit from a balanced fertilizer with an N-P-K ratio of 3-1-2 (or close to this proportion) that contains micronutrients. Many adequate formulations are commercially marketed, and one is probably not any better than the other, despite manufacturers' claims to the contrary. Application rates should be light (100 to 175 ppm is often cited as the ideal rate) although as with most things orchids, others use a much heavier application rate of 500-700 ppm and grow beautiful odontos. Some growers believe in using a high-phosphorus 1-3-2 "blossom-booster" formulation as plants approach flowering in an effort to increase flower count and substance; others, experienced and successful, feel this does not work and that the additional phosphorus is wasted.

Potting

There are as many potting methods and media used as there are odontoglossum growers. As a rule, pot these plants in a fine to medium-grade mix that provides excellent drainage; never allow the medium to completely dry out. Biannual repotting is typical. It should be done as new growth becomes about half-mature, usually in the spring or autumn when new roots are just appearing. Carefully spread the roots over a cone of potting mix and fill in around the roots. Firm the potting mix, but do not pack it as tightly as you might for cattleyas or cymbidiums. Keep humidity high, light levels low and the mix only slightly moist until new roots form. Never, never over-pot! Always use the smallest pot that adequately contains both the roots and the base of the plant, leaving just enough room for one to two years of new growth. The smaller pots dry out more quickly and evenly when filled with roots and under-potting allows the frequent watering these plants need. Planting in hanging baskets or mounts that allow for rapid drainage and maximum air movement around the plant produces good results.

Many choices and combinations of potting media



Odm. hybrid grown by Mario Ferrusi in sphagnum moss combined with beads and chunks of Styrofoam®.



Open-sided odontoglossum greenhouse at Ecuagenera, Gualeco, Ecuador.

exist, including bark, perlite, charcoal, sphagnum moss, coarse peat, chopped coconut husk, redwood wool (shredded redwood bark), Styrofoam® beads or chunks, and rockwool. Enthusiasts use a wide variety of pots and potting materials, and successful examples are found with each. While there is no universal “tried and true” medium or method, the basics for success include perfect drainage, adequate moisture retention to avoid totally drying out between watering, air circulation within the potting medium, and adequate support to hold the plant upright.

A number of odontoglossum growers, dissatisfied with the bark chips available in North America, have recently begun to use Orchiata™ bark from New Zealand and are reportedly delighted with the results. According to dealers, this bark, harvested from *Pinus radiata*, is an aged product rather than composted. One odontoglossum grower in the Pacific Northwest uses a media composed of loose (not packed) sphagnum peat mixed with perlite and has achieved excellent results. In Canada, several growers find sphagnum moss combined with beads and chunks of Styrofoam® an effective medium. This potting medium requires more frequent repotting due to the rapid break down of the sphagnum moss. If you use sphagnum and Styrofoam®/perlite media, you must use “good” water, repot every year (possibly every two), and do not pack the media.

Some growers, including the author, found that chopped coconut husk-based medium is a poor, and sometimes disastrous, choice. All or most of the plant’s roots are soon lost. This may be due to a high saline content that is difficult to leach out of the husks, despite multiple soaks.

Another grower, Tom Etheridge, grows all of his *Odontoglossum* hybrids in a 50:50 mixture of shredded coir and sponge rock and they seem to thrive. He believes that the reason for his success is that this is the ideal medium for his growing situation in the Willamette Valley of Oregon. The summers are warm and dry and the winters are cool (but not cold, average lows are just above freezing) and damp. With that in mind, he designed his greenhouse with bench-top hot water heating so that the plants dry out occasionally in

winter (the minimum bench temperatures are 45°F (7°C) at night) and with evaporative cooling from foggers and misters in the summer (85°F (30°C) maximum). He thinks that this mix helps keep the plants’ roots cool in the summer and his bench-top heat keeps them from rotting in the winter. He takes extreme care to soak and rinse the coir until the supernatant liquid has a conductivity of 80 ppm TDS or less. He was not able to get the salts this low with chunky coir, so he only uses shredded coir. It is worth noting that he uses city water that comes in at 30-60 ppm TDS year-round.

As plants grow and require ever-larger pots and greater amounts of potting mix, the risk of poor drainage, continually saturated media, and stale conditions at the roots increases. Pots with drain holes or slots in both the bottom and sides work well to avoid this problem. Some successful growers use mesh pots designed for aquatic plants with fine perforations on the sides and bottom for larger odontoglossums, cyrtorchilums and the cooler-growing oncidiums. This allows for maximum drainage and air movement on all sides and helps to avoid stale conditions at the roots. These containers have been successful, particularly with large plants.

Odontoglossums and their related genera require exacting culture, particularly lower temperatures and pure water. If you meet these conditions, the wide diversity, incredible colors and patterns, and the large number of flowers on the inflorescence of these plants make them very desirable.*

References

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About the Author

Jim Rassmann has been growing orchids for 38 years. He has grown odontoglossums along with many draculas and masdevallias since 1993 when he moved from Los Angeles to Florence, Oregon less than a mile from the coast. He wishes that he had made the move sooner—both to Oregon and to Odontoglossums. Rassmann has been a member of the ODC for at least 35 years and the AOS for a little longer. He has served as Chair of the AOS Judging Committee, as a Trustee and twice as the Vice President of the AOS.

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Plants grown in shredded coir and sponge rock.