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Growing Orchid

An Overview



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Introduction

Orchids are native to tropical regions but with little efforts and care, they can be grown anywhere in the world. Orchids are among those flowers which come in a variety of colors. Orchids grow in the most diverse climatic zones. Some flourish in continually moist, warm regions, others in regions that are warm and moist some of the time, others again in regions that are dry and hot in the day time and moist and cool at night. Regular airing or ventilation is extremely important for the growth of orchids in particular for their aerial roots. Water should always be at room temperature, slightly acid and soft. Orchids prefer weak acid water with a pH value of around 5 or 6. Under natural habitat, orchid receives nutrition from the breakdown of dead plants and is supplied in rainwater that drips from leaf to leaf and finally to the orchid.

Orchids have different life cycles to most other indoor plants. They do not grow in garden soil or ordinary houseplant compost, but in special orchid growing media and require relatively few nutrients. Proper management of five elements of temperature, light, air, humidity and nutrients is essential for production of enchanting flowers.

Growth Cycle

The life of orchids is characterized by an alternating cycle of growth periods and rest periods. The rest phase corresponds to the winter period. Many orchids flower shortly after the rest phase. If the orchids are exposed to too much moisture during this phase, they will not flower and will form only weak new shoots. There are two types of growth patterns for orchids, sympodial and monopodial. The monopodial orchids, *Phalaenopsis* and *Vanda* being the two most common, grow up off a single central stem with leaves on either side. Sympodial orchids have multiple growths and usually grow one or more new growths per year. Often the growth pattern looks like a corkscrew with each new growth coming from the side of the one before it in a circular pattern. A polyhouse can proved to be a good and ideal place to grow many plants including orchids. Light, temperature and humidity are some of the conditions which can be maintained very easily in a polyhouse.



Polyhouse for growing orchid



Shadenet house for growing orchid

Temperature

In the natural habitat, orchids like lot of warmth, night time temperatures are often around 7-12°C lower than the day time values. This night time temperature drop is necessary for the formation of flowers in many orchids and should be at least 4-6°C.

Important tips:

- Terrestrial orchids without bulbs and with relatively soft leaves do not need direct sunlight. E.g. *Paphiopedilum*.
- Epiphytes with large, fleshy and no bulbs will not cope well with a lot of sunlight. E.g. *Phalaenopsis*.
- Orchids with relatively tough leaves with large surfaces and relatively well developed bulbs will not require direct sunlight until they reach the flowering stage and begin to open. E.g. *Cattleya*, *Cymbidium*, *Laelia*, *Odontoglossum*, *Oncidium*.
- Orchids with narrow, tough, leathery leaves and large bulbs are genuine sun lovers. E.g. *Vanda*.
- Orchids with narrow leaves, almost like stems or with striated leaves and with no bulbs are well adapted to great intensity of light. E.g. *Dendrobium striolatum*.

Humidity

Humidity levels of 60-70% are the ideal conditions for the growth of orchid. Humidity levels can be raised by misters, electrical humidifiers, plastic grid or a specially equipped plant container.

Mister: These misters supply the sufficient humidity to the plant. It is better to spray the leaves in mornings, so that the plant will have plenty of time during the day to dry off before the temperature drops at night. It is not advisable to spray any plants while the sun is shining on them. The minute droplets of water will act like magnifying glasses in sunlight, and may cause burns on the leaves.

Tips for increasing humidity

- A bowl full of water should be placed between the orchid pots.
- Use waterfalls, indoor fountains, a spring stone surrounded with plants or aquariums.

Light

Orchid needs an abundance of light, and can withstand direct sun on their leaves early in the morning or late in the afternoon / evening. The light intensity required for better growth and flowering is 25 to 30 Kilo lux. They require shading between 11am to 3pm where the light intensity is too high. Generally, during bright sunny days, 50% shadenet, while during cloudy days 25% shadenet is used.

Ventilations

Regular airing or ventilation is extremely important for the growth of orchids in particular for their aerial roots. Fresh air will prevent decay and the proliferation of fungi and pests.

Growing Medium

The growing media of orchids varies according to the habitat. The growing media for epiphytic orchids contains tree bark, terrestrial orchids require soil medium and lithophytic orchids grows in rocks. The different components of growing media are,

- Tree bark:** Shredded Katus bark from *Castanopsis hystrix* is widely used.
- Coconut husk chips (CHC),** made from the pithy covering outside of the spherical, hard coconut shell,
- Cocopeat:** "Coco-Peat," is the result of grinding the husk into coarse powder.
- Perlite:** Perlite, often referred to as "sponge rock", is expanded volcanic glass, and is a great aerator and holds enough moisture.
- Pumice:** It is similar in nature to perlite, but with a higher density and lower moisture-holding capacity.
- Leaf mould:** Dried and partially decomposed leaf. A good choice for terrestrial orchids, releases lot of nutrients as it decomposes, high in water retention capacity.
- Brick pieces:** Small pieces of brick added to the media for increasing porosity of the medium. They are high in thermal mass, it is good to have them in a combination for hotter and drier climates.

- Vermiculite:** It is having high water holding capacity. It gradually releases nutrients for plant absorption. On an average it contains 5-8 % available K and 9-12 % Mg. It can fix ammonium into a form that is not readily available to the plant. This fixed nitrogen is gradually transformed to nitrate by microorganisms making it available for plant uptake.

Properties of some most commonly used growing media

Media	Moisture Retention	Thermal Mass	Watering Frequency	Stability
Stone/bricks	Low	High	Frequent	High
Perlite	High	Low	Low	High
Leaf mould	Medium	Low	Medium	Low
Cocopeat	High	Low	Low	Medium
Coconut husk	Medium	Low	Medium	Medium
Sponge Rock	Low	Low	Frequent	High
Tree Fern	Medium	Low	Medium	Medium
Katus Bark	Medium	Low	Medium	Low
Charcoal	Medium	Low	Medium	Medium
Moss	High	Low	Medium	Low

- ix) *Sphagnum moss*: It is very good for encouraging new growth; therefore a good choice for seedling orchids.

Plant Containers

Clay pots are air and water permeable and are more stable because of their weight, but they dry out a lot faster than plastic pots and may allow salts to accumulate which in turn can burn the roots of orchids. Plastic pots do not allow the growing media to dry out quickly and will always remain clean. The best plastic pots have thick walls in light colours, which do not break easily and will not heat up in strong sunlight.

Watering

Water should always be at room temperature, slightly acid and soft. Orchids prefer weak acid water with a pH value of around 5 or 6. Watering depends on many factors such as,

- On the type of growing medium
- On the plant container being used. Orchids in plastic pots will not dry out as fast as those in clay pots.
- On the humidity level, the higher the humidity the less often need to water.
- On the temperature
- On air movement
- On the growth of the plants. An orchid that is going through a growth phase and is producing many new shoots will require more water than a plant that has finished growing and is conserving energy for the ripening of its bulbs and for forming flowers.

Watering and spraying should be done in the morning hour. This will allow the plant enough time to dry off before the slight drop in temperature towards evening. Orchids are watered from above to moistened the growing medium and to avoid the water to run over the plant itself. The orchid pots should not be placed directly on the ground or on a table as the air is necessary to circulate beneath the pot. In excess water, the leaves become limp, drop off or turn yellow; the roots decays and growth ceases. In too little water, the pseudobulb shrivels, the roots turn brown and wither, and the leaves go limp, drop off or turn yellow.

Fertilizing

- For young plants the amount of nitrogen is increased e.g. NPK at the ratio of 30:10:10 (0.1-0.2%). Too much nitrogen may produce soft, unhealthy plants.
- For intermediate growth stage, a balanced fertilizer mixture may be given e.g. NPK ratio of 20:20:20 (0.1-0.2%).
- For flowering stage, adults plant may require an increase in potassium and phosphorus. e.g. NPK ratio of 15:25:25 or 15: 30:30 (0.1-0.2%).
- Fertilize twice a week during growth periods.
- Fertilize once a month during rest periods (winter).
- Never fertilize freshly repotted plants.

Based on structure of roots of orchids, the media may be prepared. For fine rooted orchids a fine grade media is desirable, whereas orchids with thick and chunky roots will do well in coarse grade media.



Leaf mould



Leaf mould + Coconut husk



Leaf mould + Coconut husk
+ Brick piece

Media preparation
(4:2:1 = Leaf mould: Coconut husk : Brick piece)

- Fertilize more often using a greatly diluted fertilizer.
- Fertilize only when the plants are in growing and require nutrients for their development.
- Never pour fertilizer on to a dry growing medium.
- Fertilize only well-rooted, healthy plants.

Repotting

Repotting is necessary in the following circumstances

- If the growing media has become hard and dense and is no longer for air or water to be permeable.
- If the plant is too large for the pot and is constantly in danger of tipping over.
- If a plants new growth is becoming too much for the old pot and is beginning to grow over the edge.
- If the plant is sick.

When to repot

The frequency of repotting will depend on the shape and growth of the orchid and also on the type of growing media. Plants may grow for years in completely synthetic polystyrene chips. Natural growing media, which will decompose and break down over a period of time, will have to be renewed more often. Sympodially growing orchids will have to be repotted approximately every 2-3 years on average, for example *Cattleya*, *Cymbidium*, *Dendrobium*, *Laelia*, *Odontoglossum*, *Oncidium*. Monopodial orchids are repotted every 3-4 years, for example *Vanda*. *Paphiopedilum*, and *phalaenopsis* should however be repotted every 2-3 years. Always repotting is done at the beginning of a new growth period. That time will be recognized by the appearance of fresh, light green shoots and when the orchids begin to form new roots.

How to repot

- Water the plant well the day before repotting so that its roots are smooth and flexible rather than dry and brittle.
- Carefully loosen the rootstock in the old pot.
- Now shake the root stock gently without allowing plant to fall apart. Parts of the roots that look diseased, dried up or shrunken should be cut off with a very sharp knife (disinfect knife with alcohol before cutting). Plants that are too large or very old can be divided when repotting.
- Place a thin layer of new growing media on top of the drainage layer in the prepared pot. Place the root stock on top of this and surround it with rest of the media. While doing this, occasionally tap the pot against the edge of the table to help the media particles to shake down into all the cracks and spaces. Monopodial orchids should be placed in the centre of the pot. Sympodial orchids can be placed in such a way that the oldest bulb is close to the edge of the pot while the new shoots are in the centre.
- Allow a space of 1-2 cm around the plant for watering purposes.

Potting and Repotting

Every orchid growing medium should have the following characteristics:

- It should be permeable to air and water and retain warmth.
- It should be light weight and loose but still hold the plant securely.
- It should absorb water easily but also drain quickly.
- It should show a slight acid pH value.

Steps in Repotting



Fungicide treatment



Placing of brick at the bottom of pot



Placing the plant in the pot



Filling the pot with growing media around the plant

After repotting

- Place the freshly repotted plant in a bright, but on no account sunny position.
- New root formation will be encouraged if a heating mat is placed underneath the pots.
- Orchids should not be given water immediately after repotting. Because the damaged parts of roots are better able to heal in growing media that is merely moist and fresh. The minimum moisture encourages the roots to grow.
- After 8-14 days, the plant may be watered normally and according to its requirements.

Orchid Species



Aerides multiflorum



Coelogyne species



Cymbidium 'sleeping nymph'



Dendrobium densiflorum



Oncidium species (Dancing girl orchid)



Paphiopedilum hirsutissimum (Lady's slipper orchid)



Vanda blue magic



Phalaenopsis species



Phalaenopsis manii

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