

Why can't I plant my orchid in dirt or potting soil? What makes orchid roots different from common house or garden plants?



In nature, orchid roots hold plants firmly to trees or rocks. Their spongy velamen soaks up moisture and nutrients. They can extend for meters away from the plant itself.

Basically the structure of an orchid plant is the same as any plant for it has roots, stems, leaves and flowers. But these parts are adapted to its way of life and differ somewhat from familiar plants which you grow in your garden. Most garden or house plants have a central root system that grows down into the soil and anchors it to the ground. From this central root, smaller, finer roots covered in fine hairs will develop forming the root system of the plant. This underground root system absorbs moisture and nutrients from the soil.

On the other hand, most of the orchids grown by hobbyists are epiphytes. In nature, rather than grow into the ground, epiphytes use their roots to attach themselves to trees or rocks where light and air movement are more plentiful.

The central core of an orchid root is covered by a spongy material called velamen. This spongy material stores water for the plant and should it remain wet for too long, the central core will rot and will no longer be able to absorb moisture and nutrients. If an orchid plant is potted in soil or dirt, the roots will not receive enough air and will be unable to dry out and will rot. In order for an orchid plant to be healthy and produce flowers, water, air and light must be in balance.

These newly emerging *Cattleya* root tips indicate that it is a good time to repot the orchid if it needs it. The white covering on the mature roots is velamen.

Orchid roots can be very fine such as those of the *Oncidium* family or very thick like *Phalaenopsis* or *Vanda* roots. The thickness of the roots is usually a good measure to determine the type of orchid potting media to use: In general, the thicker the root, the more open and less dense the potting material.

Monopodial orchids often have aerial roots that are produced at intervals along the main stem and grow out and down. Some attach to the support, if it is a slab or a totem, some go down into the potting mix in a basket or pot, but many monopodial plant roots hang in the air. Many originate above the lower leaves. Active roots are white with green or brownish tips when in growth. Dry dead roots look like brown strings and may be cut off with a sterile tool if their central core is brown.



Even experienced growers can have trouble distinguishing live roots from dead roots. Sometimes roots that appear to be dead, can still produce live, new roots as shown by the white root tip in this photo.



The roots of sympodial orchids grow from the rhizome. They are white and fleshy with a spongy covering layer. The growing tips are bright green, reddish-brown or olive color. As with roots of all plants, the growing tip is pushed forward by the division of the cells immediately behind it.

Roots take up water and nutrients for the growth of the plant. On orchids they also serve as holdfasts, attaching themselves to the insides of containers, into the slabs of cork or tree fern, or even attaching to the plastic peanuts used for drainage material in pots. Roots often venture over the edges of pots or baskets, hanging out in the air as they do in nature.

When growing in the wild, roots may secure themselves in the cracks of bark or rocks. They absorb water and nutrients from the debris that collects around them.

Old roots on a plant may cease to function and turn brown and dry or brown and soggy. These may be cut off with a sterile tool or razor blade. However, as long as roots have a green core, they are useful, and experiments show that old live roots take up as much nourishment as do new roots.



When an orchid root has only a wiry, woody core, the root may be cut off using a sterile pair of shears.

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Did You Know?

Left: *Dendrobium phalaenopsis* (syn. *Den. biggibum*)

In 1890 Frederick Sander ordered orchid hunter William Micholitz to New Guinea in search of a variety of *Dendrobium phalaenopsis* (then known as *Den. schroderianum*, now known as *Den. biggibum*) which was very coveted at the time. After suffering many difficulties he found himself a guest in a native village and was invited to watch a war dance. After awhile, he became bored and while walking about, stumbled across some ritual sacrifices. Feeling horrified and sick, he rushed towards the jungle where perched on the boughs of trees, *Den. phalaenopsis* was rediscovered. Large quantities were removed and readied for shipment to England. While en route, fire broke out on the ship and the precious cargo was lost. Ordered back to find more plants, Micholitz grudgingly returned to New Guinea and in June of the following year on some rocks in a small village, he once again found plants growing on bare limestone between a large number of human skulls and bones. After bribing the reluctant natives with trinkets he had brought from England for this purpose, every plant in the area was collected. Despite his promise to Sander to not send any bones or skulls with his precious cargo, one plant attached to a skull arrived in England where it created quite a sensation when it was put up for auction. Swinson, Arthur, Frederick Sander: *The Orchid King*, Hodder and Stoughton, London, 1970, pp. 103-106.

