



Orchid Diseases: Part I - A reasoned approach

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Your orchid is failing to thrive, has unsightly blotches, tiny speckles, or deformed flowers. What is the problem? Read almost any book about orchid culture or search key phrases such as orchid+diseases via the web and you will find as vast an array of diagnostics and solutions that you could imagine. Read a book or peruse the internet, and you will face similar challenges. Is what you have in hand that which is pictured or described? Just how potentially damaging is this 'problem' to the orchid collection? What measures should be employed to control it? Is the best approach, 'toss' and try again? Should you spray first and ask questions later or should you first try to outline why you think there is a problem in hope of developing a possible solution?

The 'good' news! When 'symptoms' do not necessarily mean serious trouble

Every spot, blotch, eruption or discolouration is not necessarily a sign that an orchid has been stricken with a deadly disease. They could be the result of a natural process or an environmental injury. Some orchids have naturally spotted foliage while others have dark hairs or scales. For example, the leaves of *Maxillaria reichenheimiana* have white spots and the developing leaves of *Rudolfiella picta* are marked with mauve speckles that fade slowly with age. Pseudobulbs of some orchids darken with age as part of a natural process but there are instances where the sudden darkening of plant parts, especially when accompanied by leaf drop, is a sign that something is seriously wrong. How can you be certain that what you are observing is a natural or a benign process and not some dreaded ailment? Before consulting a fellow hobbyist or specialist, book, website or diagnostic service, assemble what you already know and have observed.

STEP 1 - Answer the following questions about the symptoms.

- 1 - Is the affected area small or large? What does it look like?
- 2 - Is it confined to the growing point/new shoot, pseudobulb, flowers, old leaves, new leaves or to a particular part of a leaf such as the tip?
- 3 - Have the symptoms suddenly appeared on one or on several plants at the same time especially if they are all located in one part of the growing area?
- 4 - Is the affected area enlarging rapidly (doubling in size over a few days or less)?
- 5 - Are leaves suddenly turning yellow and dropping?
- 6 - Is the affected area soft or oozing fluid?
- 7 - Does it smell bad or of rotting fruit?

Black spheres

Tiny black spheres stuck to the surfaces of leaves are the reproductive bodies produced by the Artillery Fungus, *Sphaerobolus stellatus*, that lives harmlessly in moist bark or coconut husk. The spheres may look ominous but are nothing to worry about.

Dry, brown spots

The small, isolated spots that appear on older foliage could be part of the natural aging process or the result of physical impact or physiological damage such as sunburn, overheating or a chill.

Dying leaf tips

Browning leaf tips are often suggestive of root/watering problems. The dying leaf tips may become colonized by opportunistic fungi which could eventually become a problem but since cultural technique is likely the cause, correcting that will stop the problem in its tracks.

Disfigured flowers

Cool, humid conditions are a breeding ground for Botrytis, a fungus which attacks flowers, disfiguring beautiful flowers with scattered black dots. Improved ventilation and some nighttime heating will minimize or eliminate the problem. Black Sooty Mould growing on leaf surfaces is unsightly but harmless. The presence of Sooty Mould is symptomatic of scale insects or aphids feeding on the leaves above. The insects produce sticky secretions (honeydew) which drips to the leaves beneath and there supports the growth of the sooty mould. Control of the pest will ultimately eliminate the symptoms.

Discoloured spots on Phalaenopsis foliage

The variously shaped yellowish blotches that appear on the leaves of *Phalaenopsis* can be particularly worrying and sometimes rightly so.

Dark, wet lesions

The appearance of blackened and collapsing pseudobulbs or soft, smelly oozing leaf lesions that enlarge rapidly signalling that an aggressive pathogen, bacteria or fungus, is attacking the orchid and requires your immediate attention.

***TIP!** Orchid plants infected with virus may or may not exhibit symptoms but all infected plants are potential reservoirs of infection. Since there is no known cure and plants carrying virus without symptoms remain a threat to the collection, always use sterile cutting tools when dividing or potting plants and when cutting flowers.*

Step 2 - Answer the following questions about culture.

- 1 - Have the affected plants been recently acquired?
- 2 - Has there been a recent abrupt change in growing conditions?
- 3 - Have the plants been overheated or chilled?
- 4 - Have the plants been exposed to paint fumes, smoke or household cleaning products?
- 5 - Has it been overcast for several consecutive days or have the plants been continuously wet for two or more days?
- 6 - Has the rainy season recently begun or has there been a wind storm/hurricane when the plants were buffeted by gusts?

Poor growing conditions, too little light, inadequate air movement and high humidity are always a recipe for disaster. Weakened plants may not be able to resist the invasion of even the most common microorganisms. Plants bruised during transit will have open wounds which are an ideal environment for disease to take hold. But diseases, especially the really damaging ones, do not arise spontaneously. The causative bacteria, fungi and viruses are imported into a collection with new acquisitions, by insects, by wind and water from sources outside the growing area, by cross contamination with other plants in transit or at a show, or even by ourselves when we unwittingly handle diseased material and then handle our plants without first washing our hands.

Orchids are quite resilient but can react to environmental insult such as a chill by dropping flower buds or even leaves. Some orchids are particularly sensitive to organic solvent fumes or when sprayed with a pesticide containing a solvent. Within 24 to 48 hours of exposure, leaves of sensitive species such as *Epidendrum pseudepidendrum*, *Psychopsis papilio* and *Dendrobium moschatum* will yellow and the plants can die. Cool-growing Masdevallias exposed to high temperatures can later suffer the dreaded leaf drop and an untimely passing and there is nothing the grower can do about that except avoid making the same mistake again. When plants appear as if they are afflicted with a terrible disease, a grower should think about what might have led to this situation before reaching for the sprayer.

STEP 3 - Consult an expert

Orchid clubs are often the first place a worried hobbyist goes to find out more about their problem. When planning to consult a club member, always seal the specimen from contact with other plants. Place the sample in a sealed container such as a plastic bag. It is usually easier to identify a problem if the plant is still alive. Understand that a fellow grower may only be able to suggest an answer to a problem and that a more detailed investigation and confirmatory tests may be needed. Provincial and national governments as well as certain universities and grower associations may offer a pest and disease diagnostic service to farmers, greenhouse producers of commercial crops and often also to the public, usually for a fee. Professional diagnostic services will provide guidelines for sample submission. Bear in mind that some problems are easier to solve than others. Fortunately, virulent disease organisms such as *Phytophthora sp.* and viruses, for which there are specific diagnostic tests, are more certain to be correctly diagnosed. Once the problem is correctly identified, then control measures appropriate to the plant and place can be suggested.

Watch for the publication of Part II which deals with specific orchid diseases.