

Orchid Diseases in the Northern Territory

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There are many types of disease-causing organisms that attack orchid plants. Some can be difficult to control. Only a small number of diseases are recorded in the Northern Territory, but in some cases they can severely affect the growth of orchid plants.



Figure 1. Orchid infected by petal blight (*Curvularia eragrostidis*)

COMMONLY FOUND ORCHID DISEASES IN THE NORTHERN TERRITORY

BACTERIAL SOFT ROT

Orchids affected - Dendrobium, Oncidium
Causal organism - Bacterial, possibly *Erwinia carotovora*

This disease causes a rapid collapse of bulb and stem tissues resulting in leaf loss making infected tissue very soft to the touch. When the stems are cut open a pungent odour can be detected. Diseased plants should be separated from healthy plants and if necessary destroyed or trimmed of infected material. The bacteria are readily spread by sap on hands or cutting tools and by water splash from infected to non-infected plants.

PETAL BLIGHT

Orchids affected - Dendrobium hybrids
Causal organisms - *Curvularia eragrostidis*
Alternaria alternata

Dendrobium flowers are most susceptible to this disease which causes small brown spots to develop on the petals. The brown spot becomes very pronounced on white and light coloured flowers, detracting from the

marketability of such flowers. The disease is very difficult to control and is most severe during rainy weather. Growing the orchids under a solid roof structure seems to minimise the incidence of this disease.

TOP ROT/SHOOT ROT

Orchids affected	-	Vanda (top/stem) Cattleya (shoot)
Causal organism	-	<i>Phytophthora parasitica</i>

Phytophthora can cause the death of the whole plant (Vanda), or shoots, (Cattleya). A symptom of top rot includes the death of new leaves, which turn dark brown. This discolouration advances down the stem, turning it dark brown. This disease may also start at the base of the stem and work up resulting in the same dark brown stem discolouration. Shoot rot was detected on Cattleya orchids in Darwin causing the rapid death of new side shoots, turning them almost black. The disease will spread back along the rhizome to the next shoot causing the same symptoms.

As there are only two orchid types on record to have been attacked by this disease, it is difficult to say if others could be affected in a similar way.

STEM ROT

Orchids affected	-	Dendrobium, Vanda
Causal organism	-	<i>Sclerotium rolfsii</i>

The symptoms of this disease are a rapid collapse and rotting of the stem, roots and leaf tissue. However, we have observed this disease attacking Dendrobium plants from the top causing rapid collapse and rotting of top growth. The disease then advances either up or down the stem.

The disease is characterised by the presence of small yellow cream to brown spherical bodies called sclerotes which are embedded in a dense white fluffy mat of fungal growth. Each sclerote can act as a source of infection, and therefore all infected plants should be removed as soon as possible and destroyed.

BLACK LEG OR SLOW DECLINE

Orchids affected	-	Dendrobium
Causal organism	-	<i>Fusarium</i> spp.

Over the years a number of *Fusarium* species have been isolated from orchid plants which have been associated with this disease. Those isolated to date are *F. solani*, *F. oxysporum*, *F. subglutinans* and *F. proliferatum*, the latter two being the most frequently found. The plants may or may not exhibit a blackening of the pseudobulb and lower stem, but successive new shoots tend to get smaller in height, with stem thickness being reduced. This may lead to the death of infected plants; however this has not been observed in a nursery situation.

SEEDLING ROT

Orchids affected	-	Vanda
Causal organism	-	Bacterial

This is only a problem of seedling orchids particularly deflasked seedlings and those living in a community pot situation. This can cause heavy losses during the wet season in Darwin. The seedlings are attacked through the roots or leaves, leaving the tissue soft and watery leading to the death of the plant. Infected seedlings should be separated and placed in a well ventilated area to help facilitate drying of the tissue between waterings.

LEAF SPOTS

Orchids affected	-	Vanda
Causal organism	-	<i>Guignardia</i> spp, <i>Phyllosticta</i> spp.

This can be a serious leaf spotting disease of Vanda orchids and related hybrids. Symptoms can occur on either side of the leaf, starting as small black raised lesions giving a rough texture to the leaf surface. As they mature they enlarge to form pustules which contain the spores for new infections.

Orchids affected	-	Dendrobium
Causal organism	-	<i>Cercospora</i> spp.

There are a number of *Cercospora* species which can be found attacking orchids of all types, resulting in a range of symptoms. Specimens collected from Dendrobium hybrids in Darwin, showed large areas of the leaves turning a very pale green with slightly sunken purple coloured spots, present on both upper and lower leaf surfaces. This appears to be the most common symptom. However, this disease can start as yellowish pale brown spots, turning purple black with age.

Orchids affected	-	Dendrobium, Oncidium, Rhynchostylis
Causal organism	-	<i>Acidovorax avanae</i> subsp. <i>cattleyae</i>

The disease caused by *Acidovorax avanae* subsp. *cattleyae* has been reported on three genera of orchids, usually starting off as small brown soft water soaked areas which quickly expand over the entire leaf. The covering on the infected area is easily damaged releasing a bacterial 'soup' which is spread to healthy leaves by splashing water.

LEAF BLIGHT (ANTHRACNOSE)

Orchids affected	-	Cattleya, Phalaenopsis, Dendrobium, Vanda
Causal organism	-	<i>Colletotrichum gloeosporioides</i> (<i>Glomerella cingulata</i>)

This is considered only a minor pathogen and is usually a result of some type of injury to the leaf, whether it be mechanical, chemical or insect damage. Once the organism becomes established the infected area quickly browns off and has a distinct yellow/green halo around it. More often than not the brown dead tissue has a concentric ring appearance.

VIRUSES

Orchids affected	-	Vanda, Dendrobium, Oncidium, Phalaenopsis, Cattleya
Causal organism	-	Cymbidium Mosaic Virus

Cultivated orchids are infected by at least 16 viruses worldwide which cause various disease problems. Perhaps the most common orchid virus is Cymbidium Mosaic Virus (CyMV). Foliar symptoms induced by CyMV range from chlorotic mosaic patterns, seen clearly on the youngest leaves, in many orchid varieties, to black necrotic streaks/spots/rings and sunken patches on Cattleya orchids.

Once an orchid has been shown to be infected by a virus, it should be destroyed as it cannot be cured. This will prevent the infection of other orchids.

The main method of spread of this disease is through the mechanical transmission of sap on hands or tools. Sanitation must play an important role if CyMV is to be prevented from spreading. Grasshoppers may also help to spread the virus via their mouthparts.

DISEASE ORGANISMS NOT YET DETECTED ON ORCHIDS IN THE NT

As more orchids are grown in the Territory the risk of disease also grows. New diseases can be introduced on imported plant material and a few possible diseases are listed below. In the event that a grower finds an unusual diseased plant amongst his/her collection, he/she should immediately contact a Plant Pathologist to assist with its identification and appropriate treatment.

ROOT ROT

Orchids affected - Numerous orchids
Causal organism - *Rhizoctonia solani*

RUSTS

Orchids affected - Numerous orchids
Causal organism - *Spenospora* spp., *Coleosporium bletiae*, *Uredo* spp.

DISEASE CONTROL IN ORCHIDS

In order to maintain a disease-free orchid collection, the following steps are suggested:

1. Healthy stock – buy only vigorous, disease-free plants.
2. Cultural practices – keep benches and floors free of plant debris. Remove all diseased plants or parts of plants, e.g. diseased leaves. Improve air flow to help dry foliage and stems to reduce bacterial diseases. Sterilise cutting implements by dipping in alcohol or bleach.
3. Fungicides – there is a wide range of fungicides available on the market. Contact your local Departmental officer for advice.

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