

# Fusarium

## Biology

*Fusarium rot - stem and root rot*

The main pest on *Phalaenopsis* and *Paphiopedilum* is *Fusarium oxysporum* Schlecht. The fungus forms its fungal spores on the usually whitish to pinkish spore hymenia (sporodochiae). They are either long and sickle-shaped and serve to survive (macro conidia), or they are small, globose to oval (micro conidia). The conidia spreads the infection in the stand and infests further host plants. Most parasitic *Fusaria* are vascular parasites, they obstruct the conducting tissue and cause wilt diseases. They are typical secondary parasites, the reasons for infestation can be too high a salt concentration, low ground temperatures, gnawing by organisms in the ground and inappropriate substrates that are too wet or contain too much peat. *Fusaria* and other fungi multiply particularly quickly in sterile plant substrates with a high percentage of peat, because in those materials there are no other micro-organisms as natural antagonists.

## Damage

Infections caused by *Fusarium* on *Phalaenopsis* and similar hybrids are characterised by small yellow-brown to reddish lesions on the roots. The coloured areas increase in size as patches of dry rot appear with its typical constrictions. At the neck of the root the tissue turns hard and black with dry rot. With increasing infestation the dry rot areas at the base of the leaves become larger and in high humidity pink hymenia form on the dry rot areas. The youngest leaves of *Phalaenopsis* become extremely reddish, there is chlorosis formation and finally the leaves fall off and the plant begins to die. Older leaves often become coriaceous and dry out. In some varieties, *Fusarium* can also damage the flower stalk producing sunk-in, dry rotten spots, the blossoms fall off prematurely. In *Paphiopedilum*, infection often affects the root insertion places and the leaf basis. Watery rot appears, the individual leaves can then often be pulled out of the leaf sheath. The disease progresses relatively slow. A stand can be infested for several months without any plants dying. The healthy part of the plant often forms a lot of new roots. But usually marked growth depressions are a sure sign of a *Fusarium* infection.

## Control

*Fusarioses* on roots are often detected too late, because in the early stages, the plants do not show that their roots are in a bad state. They are typical secondary parasites. Plants with retarded growth due to too extensive fertilisation, exceedingly wet substrates or extremely low ground temperatures can easily be infested. Gnawing of the roots by ground organisms also offers favourable infestation conditions for that fungus.

- Control should be generally prophylactic by improving the respective cultivation methods.
- Severely infested plants should be destroyed or at least planted elsewhere and all dead roots have to be removed carefully.
- Treatments with fungicides against *Fusarium oxysporum* on roots are only sufficiently effective in the early stage of the disease. Watering with fungicides are not effective enough and can negatively influence the growth of the plants. In the case of *Fusarium* infestation at the base of the leaves, spraying can be useful to stop it spreading in the stand and get the infestation under control.

Orchids diseases

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*Paphiopedilum*: Fusarium rot on leaf base



*Phalaenopsis*: root rot, *Fusarium oxysporum*



*Phalaenopsis*: root rot, *Fusarium oxysporum*



*Phalaenopsis*: root rot, *Fusarium oxysporum*

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Orchids diseases

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*Paphiopedilum*: Fusarium rot on leaf base



*Paphiopedilum*: Fusarium rot on leaf base



*Psychopsis*: Fusarium rot on leaf base



*Vanda*: Fusarium rot, red sporiferous layer

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