

**D**ry rot is a disease that attacks the bulb, commonly seen in patches throughout the crop especially during the autumn and winter. It's caused by a fungus called *Phoma lingam*, also known as *Leptosphaeria maculans*. This pathogen crops up occasionally and in certain fields can cause significant crop loss. The worst cases are where swedes follow swedes that were affected with dry rot in the previous year. *Phoma lingam* also causes black leg (or stem canker) in other brassicas and oilseed rape.

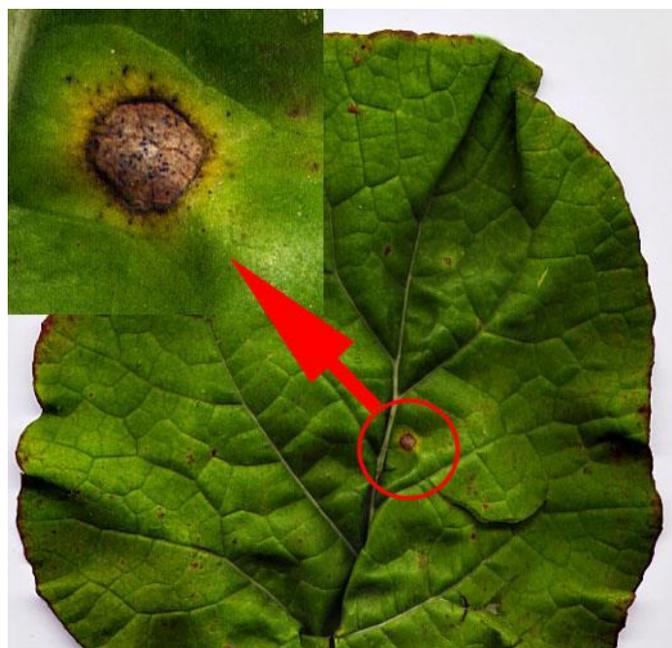
## Sources of infection

The fungus can be seed borne but a far more common source of infection is from airborne ascospores. These are produced from infected plant debris remaining on the soil. These plant remains could be from any canker-infected brassica but oilseed rape is an important source of inoculum. In the latter case airborne spores which are produced on the stubbles, are discharged in large numbers from September to April during periods of wet weather. They can be carried long distances by wind – over 1000 m - to infect neighbouring swede crops. Infected debris can survive for several years but disease risk diminishes with time. And hence the need for good rotations with other brassica crops to minimise risk of carry-over.

## Symptoms

The optimum temperature for ascospore infection is 15-20 °C. Symptoms will appear after a few days or a few weeks depending on temperature. The initial symptoms can be seen on the leaves as small pale leaf spots (5-20 mm diameter) which later develop masses of black dots called pycnidia. Once *Phoma* leaf spots become established they produce secondary spores called conidia, that are dispersed by rain splash.

The disease manifests itself on the bulb as pale elongated greenish lesions commonly found on the crown of the plant, which gradually extend, deepen, and turn brown to become a transverse crack. Minute dark structures (pycnidia) that contain spores are produced at the edges of the sunken area. Eventually a dry brown rot develops, and in cases of secondary bacterial infection, turns into a wet rot. Although dry rot can be initiated from leaf inoculum, it can also arise from direct airborne infection.



## Disease spread

Once infection takes place it will spread during wet weather when spores ooze out of the pycnidia and are dispersed by rain splash and wind. It follows that wet summers followed by mild wet autumns will favour the spread of this disease. Dew or wetness that persists for long periods can also allow the fungus to multiply. Small fields enclosed by hedges will help such conditions to develop.

## Control

- maintain a rotation of at least four years between brassica crops and preferably longer
- select fields with an open aspect to reduce incidence of disease
- if possible locate swede fields as far away as possible from oilseed rape
- oilseed rape stubble and trash should be ploughed down straight after harvest
- swede varieties vary in their susceptibility to the disease; Magres is susceptible with Helenor being less so
- ensure that seed is dressed with thiram
- apply fungicides from August to October for at-risk crops using a combination of the products listed below.

Product	Chemical	Rate per ha	Max No	Harvest interval
Rudis	prothioconazole	0.4 L	3	3 weeks
Score	difenoconazole	0.5 L	1	4 weeks
Amistar	azoxystrobin	1 L	2	2 weeks



Typical dry rot symptoms



Leaf spot on rape