

Two economically relevant diseases in soya bean production

Investing more in understanding and growing a higher-yielding soya bean crop, could prove to increase and improve our long-term cultivation practices. The reality of producing more crop from less available arable land remains a global agricultural challenge, and the improvement of soil health is critical in long-term sustainable production systems. Improved soil health will support the fight against economically relevant diseases.

Two of these diseases that can have a grave impact on the potential yield of a soya bean crop, are soya bean rust and *Sclerotinia*.

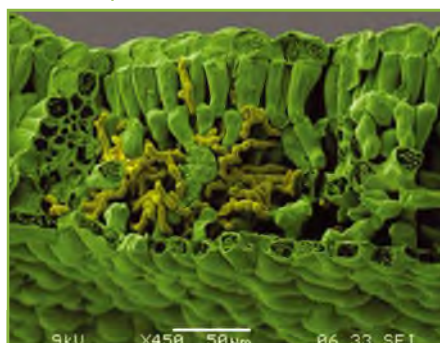
Soya bean rust

Soya bean rust (*Phakopsora pachyrhizi*), also known as Asian soya bean rust, has affected soya bean cropping in parts of South Africa since 2001. The disease causes leaf lesions, which may progress to premature defoliation, ultimately resulting in grain yield loss in susceptible soya bean genotypes.

Asian soya bean rust produces two types of lesions. At a later growth stage, the lesions will turn from grey to tan or reddish brown. Mature tan lesions consist of small pustules surrounded by discoloured necrotic areas. These pustules mostly form on the bottom of the leaf and are usually raised, differentiating it from bacterial pustules and lesions caused by spot diseases.

Soya beans are susceptible to the disease at any growth stage, but symptoms are most commonly found during or after flowering. Asian rust can cause a decline in pod production and fill.

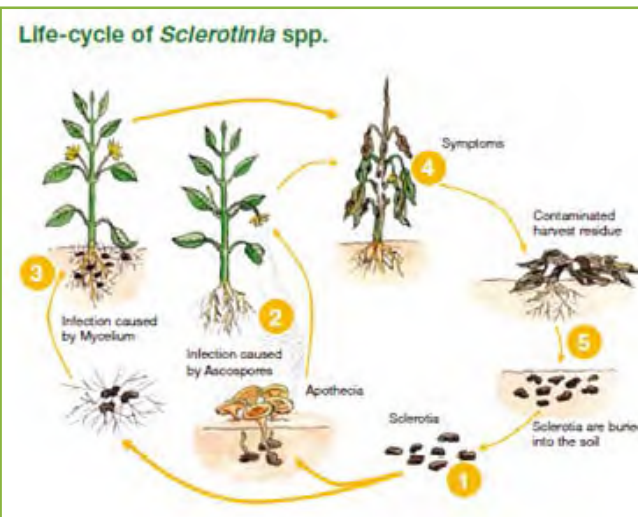
Sclerotinia (*Sclerotinia sclerotiorum* and *Sclerotinia minor*)



Soya bean leaf profile, five days after rust infestation. No treatment was applied.



Soya bean leaf profile, five days after rust infestation. Tebuconazole was applied.



The life cycle of *Sclerotinia* spp.

1. The sclerotia of *Sclerotinia* can survive in the soil for several years. Viable sclerotia have been detected in the soil even after ten years since infection. Sclerotia germinate and develop apothecia within the top 3 to 5cm of the soil.
2. These apothecia produce ascospores that are released into the air. They attach to senescent parts of the plant such as old leaves and fallen petals. Depending on climatic conditions (temperature and moisture), these spores can germinate and infect the plants. Leaves, flowers, fruit and stems can be infected.
3. Moreover, the mycelium resulting from sclerotia germinating in the soil can infect the roots of certain host plants. The symptoms of infection vary among plant species and can appear rapidly.
4. White mycelium develops and new sclerotia appear on the infected plant parts or inside the stem. The plant starts senescing and dies.
5. The newly formed sclerotia reach the soil and can be viable for several years.

Symptoms are most commonly found during or after flowering.





Surviving structures (sclerotia) of *Sclerotinia* are viable in the soil for several years.



Sclerotia germinate and develop apothecia.



Apothecia formed from *S. sclerotiorum* can develop up to 5cm long.

The reality of producing more crop from less available arable land remains a global agricultural challenge

Impact on yield

Both soya bean rust and *Sclerotinia* have the potential to significantly decrease the yield of a soya bean crop. By managing the full spectrum of sound agricultural management practices, a grower can ensure yielding crop at full potential by the end of the season.

Selecting the right cultivar specific to the area, treated with and protected by the correct seed treatment product for the particular soil conditions, and correctly preparing the seedbed with pre-plant activities and a full scope of pesticide practices (including herbicides, insecticides and fungicides) throughout the growing season, will all support the improvement of the soil health. These steps should effectively keep the potential economic impact of untreated diseases at bay.

For more information, contact Bayer on 011 921 5002 or visit the website www.bayer.co.za.

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