

# Fungal diseases

## cause major headaches

By Hendrik Linde, agronomist in the Western Free State

**T**he season's initial dry start was followed by good, widespread rainfall over large parts of the country. Although the good rainfall had a positive effect on the growth and development of several crops, it also gave new life to many fungal diseases, such as *Sclerotinia sclerotiorum*.

*Sclerotinia* head rot (Figure 1) is without a doubt one of the most serious diseases when it comes to cultivation of sunflower and other broadleaf crops. The disease occurs on 370 host plants of different species and is an extremely difficult disease to control.

### Lengthy periods of wet weather

*Sclerotinia* head rot occurs sporadically and only after lengthy periods of wet weather. There is a small probability of outbreaks of the disease in dry years. The fungus produces sclerotia (survival structures) that overwinter in the soil and germinate after approximately seven to 14 days. Germination occurs during conditions of high soil moisture and temperatures of 15 to 25°C. The sclerotia develop apothecia (Figure 2) and it can reach the soil surface from a depth of 2 to 5cm.

Apothecia produce ascospores for approximately a week or more if the soil moisture remains sufficient. Ascospores

Figure 1: *Sclerotinia* head rot in sunflower.



are released into the air and spread by the wind to nearby host plants. The spores do not infect healthy tissue, only wilted or dead tissue; the tissue can be anything from wounds caused by hail or insects to flowers that wilt or die after pollination.

### Reduce spreading

As soon as the spores settle on dead tissue, which occurs in the presence of water (any form of free water, such as rain, dew, etc.), oxalic acid is produced. The acid digests the tissue, which becomes available as food for the fungus. Crops such as sunflower and soya beans are particularly sensitive to *Sclerotinia* during the flowering stage of the crops.

Figure 2: Apothecia sprouting from germinating sclerotia.



There is no exact solution for the disease, but the following practices can help to reduce the spreading of the fungus:

- The most effective way is crop rotation with a non-host crop such as maize or sorghum.
- Plant on fields where the fungus did not occur the previous year. This includes nearby clean fields.
- Keep fields clean from broadleaf weeds and other host plants during rotation with a non-host crop, because many weeds, such as cocklebur (Figure 3), are also host plants of the fungus.

Figure 3: *Sclerotinia* infection on cocklebur.



- Cultivation practices can affect the occurrence of the disease. It has been proven that minimum or reduced cultivation that keeps the sclerotia on or near the soil surface promotes the microbial breakdown of sclerotia, while deep placement of the sclerotia by means of a plough promotes its survival. If it is decided to plough the sclerotia deep into the soil, guard against deep follow-up cultivation that may bring the sclerotia to the surface. It poses a risk in that the sclerotia can be spread evenly over the field if it is cultivated.

There are registered chemical and biological agents available to treat *Sclerotinia*. However, the time of application of the chemical agents is crucial and the application of biological agents is an exceptional long-term solution. 🌱

For more information, phone Hendrik Linde on 079 527 7696.

References: B Nelson, A Lamey, *Sclerotinia* Diseases of Sunflower (2000).