Sclerotinia head rot of sunflower: A continuing threat

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Sclerotinia sclerotiorum is a fungal pathogen, which infects sunflowers, causing Sclerotinia head or stem rot diseases. This fungus attacks a wide range of field crops including soybeans, beans, canola and lupins as well as various vegetable crops.

Sclerotinia stem rot of sunflowers is not a direct major threat to sunflower production with isolated plants in a field being infected. However, Sclerotinia head rot of sunflowers can cause major damage – particularly in late-planted crops that ripen in cool, wet conditions.

Recently this disease has spread in the local sunflower production areas with high incidences, up to 90%, being recorded in fields in the North West Province and northern Free State provinces of South Africa. This last season severe damage was recorded in the primary sunflower production areas, which implies that there are high levels of inoculum on these fields that may cause challenges this coming season should late rains be experienced.

The continued spread of this disease is a major threat for sunflower production in South Africa. Increased disease pressure will also impose an increased threat on production of other susceptible crops, particularly soybeans.

The wide host range infected by the disease and increased disease pressure will indirectly impact on maize production by reducing much needed crop rotation options, particularly where conservation tillage practices are on the increase. A lack of alternate crops in crop rotation systems will force producers to plant maize under monoculture, which, particularly under conservation tillage systems, brings a different set of disease problems.

Symptoms of the disease

Head rot

The fungus infects the back of the head and the tissue becomes soft, light brown and spongy. This infection extends into the developing head (**Photo 1**) and down the stalk and eventually only the fibrous strands at the back of the head and upper stalk remain.

The infected seed at the front of the head eventually falls out of the head due to sheer weight of the infected seed. Large, black sclerotia develop below the seed layer and around the seeds (**Photo 2**).

Biology of the disease

Head rot

During periods of high rainfall and cool temperatures during head fill, the disease is most prominent. Saturated soil results in production of apothecia from germinating sclerotia. These apothecia are small mushroom-like fruiting bodies and look like a golf tee.

Apothecia form and release spores into the air, which are windborne and infect the sunflower head during wet weather. The spores use dead flower parts as a food source as they cannot infect healthy tissue.

Once the fungus becomes established, it produces oxalic acid, which kills tissues, as well as extracellular enzymes, which digest tissues,

▲ **1: Fibrous strands at upper end of stalk and head as a result of Sclerotinia head rot damage.** Photo: Dr André Nel, ARC-Grain Crops