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Photo 1: Sori of cob and tassel smut develop on infected ears, which appear round and lack silks.
Photo 2: Tassel infections of cob and tassel smut infected spikelets.
Photo 3: At times tassel infections of cob and tassel smut form leafy structures. Photo: Rikus Kloppers.

How to manage cob and tassel smut on maize

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Cob and tassel smut used to be a major threat to maize production in South Africa during the late 70's and early 80's having reduced yields during serious epidemics. Fortunately sources of resistance were identified and were used in commercial breeding programmes to control these epidemics, resulting in reduced pathogen inoculum levels. This restricted further spread and occurrence of cob and tassel smut in the country. Ever since, isolated infections were generally restricted to the drier maize production areas.

Recently, however, this disease has been noted to be on the increase in certain areas in South Africa, in particular the Standerton area in Mpumalanga where the disease has since reached epidemic proportions. There are a number of possible reasons for this. The primary reason is that new cultivars being introduced are generally very susceptible to the disease.

As the disease has not been present for a number of years prior to this new outbreak it is possible that complacency set in. The disease was either neglected in local breeding programmes or genotypes brought in from the USA, lines to be used in breeding programmes or hybrids to be grown locally, may be inherently more susceptible to cob and tassel smut.

Cob and tassel smut, also known as head smut, is caused by the fungus *Sphacelotheca reiliana* (syn. *Ustilago reiliana*) and occurs in South Africa, Australia, Mexico, New Zealand, Asia and south-eastern Europe. This disease was first recorded in Kansas, USA in 1890 and occurs periodically in certain areas of the USA. Cob and tassel smut is still a major quarantine disease and a great concern in the USA. Farms where it is found are quarantined and the disease is thus contained.

Reports from Rhodesia (Zimbabwe) during 1910 and South Africa during 1911 followed. The fungus infects both maize and sorghum and where monoculture maize has been grown for a number of seasons, 25% or more of the crop may be infected. The sorghum race of this disease may infect maize, sorghum and Sudan grass, while the maize race infects only maize.

In preliminary studies done locally the sorghum isolate did not infect maize and the maize isolate did not produce symptoms on sorghum (personal communication, Dr Rikus Kloppers, Pannar). This might, however, change with new races of the pathogen developing when disease levels increase.

Symptoms

Disease symptoms develop after maize ears and tassels have developed. Powdery spore masses (sorus) develop on infected ears, which appear round and lack silks (**Photo 1**). The sorus of an infected ear, ruptures and the black powdery spore mass can be seen among the remains of the host's vascular tissue, which appear as fibres running through