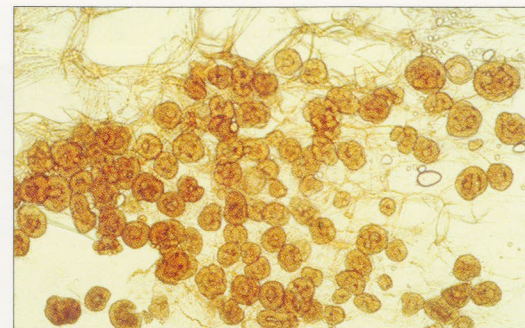


Besides resistance, the use of disease-free seed (not stored in the proximity of infected potatoes) and an ample rotation cycle in which volunteer potatoes and black nightshade are well controlled are possible ways of controlling this tuber disease. Take great care with irrigation and ensure a good soil structure. For fields that are at risk, it is advisable to limit irrigation to 75% of the water capacity of the soil. The effects of these measures are noticeable but not sufficient. In all cases it is of the utmost importance to prevent the zoospores (which develop and subsist on the root hairs of rotation crops and weeds) from

9. Lesions void of most spores and the underlying corky layer still present. Watch the raised skin remnants bordering the lesion and the beginning of secondary infection visible as rims of raised tissues. (Photo S&C)



10. Mature spore balls in a disintegrated wart of powdery scab. (Photo PRI)

transferring to the next potato crop. For this reason, there should be a bare fallow period of a few months between the last crop and the subsequent potato crop. Where powdery scab is concerned, ploughed-up grassland has a particularly bad reputation. If potatoes are the following crop, the grass must therefore be killed sufficiently early in autumn and ploughed under before winter. This means that the grass roots die long enough before planting potatoes, so that zoospores are not produced any longer in the root hairs.

Do not grow seed potatoes in contaminated fields. Prevent contamination of the farm by applying strict sanitation procedures (do not use contaminated manure or manure from an unknown source). It is difficult to control powdery scab chemically.

L.J. Turkensteen and P. van Baarlen

RHIZOCTONIA CANKER (BLACK SCURF)

General

Rhizoctonia solani (*Thanatephorus cucumeris*) is a commonly in soil occurring fungus, which causes damage to many crops. It causes a range of symptoms in potatoes. Most damage in seed potato crops is caused by the presence of sclerotia on the tubers. This symptom is known as black scurf. Because seed potatoes infested with black scurf may have problems at emergence, the Dutch General Inspection Service for Agricultural Seeds and Seed Potatoes (NAK) has set specified standards for admissible infestation levels of black scurf on seed potatoes. *R. solani* is sub-divided into a number of so-called anastomosis groups (AG's). These AG's are specific to a single crop, or a few crops. The strain of *R. solani* that affects potatoes belongs to anastomosis group 3 (AG 3).

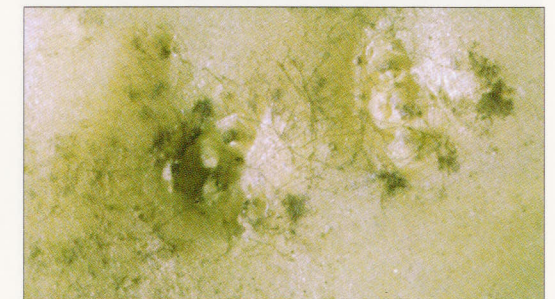
Symptoms

Resting bodies

Black scurf is the best-known symptom. It is characterised by dark, crust-like structures on the skin of tubers. These are manifest in washed potatoes because the pitch-black sclerotia are not removed by washing; they remain distinctly visible against the cleanly washed skin. They can be easily removed with the fingernail, however. Black scurf starts as small, pale grey cushions that are concentrations of hyphae (Photo 1), which expand and turn black within a few days (Photo 2). The distribution of black scurf on the tuber and the size of the sclerotia may vary. Usually, the individual sclerotia are 1 mm to 5 mm thick and 1 mm to 10 mm long (Photo 3), but sometimes an entire tuber or part of it is covered by a black crust. The development of black scurf is accelerated by early chemical haulm destruction, as is done in Dutch seed potato production. After pulling the haulm it takes several days longer for seed potatoes to become severely infected, because in that case *Rhizoctonia* develops more slowly.

Young sprouts

Subterranean penetration of developing sprouts (Photo 4) may cause considerable damage to the



1. Concentration of hyphae of *Rhizoctonia solani* on the tuber skin (enlarged). (Photo ATO)



2. Tuber closely set with small to moderate sclerotia. (Photo PRI)



3. Tuber with thick, dark sclerotia: a severe form of black scurf. (Photo CWE)