DNA turfscan®

What ?

The **DNA turfscan®** is an analysis method for plant pathogens, based on the use of hereditary material of organisms, more precisely DNA. Each living organism has specific and unique parts within its DNA profile, which makes it unique and recognizable. By searching these unique parts it is possible to identify an organism quickly and accurately. The **DNA turfscan®** uses the array technology which allows it to detect an unlimited number of organisms all at the same time. For the development of the **DNA turfscan®**, all important sports turfs pathogens were selected in close collaboration with Belgian and foreign specialists (amongst which STRI at Bingley, Leeds, UK).

Why ?

To be able to guarantee the high quality of sports turfs, optimal growth circumstances are extremely important, e.g. nutritional condition, water supply, the absence of harmful organisms, etc. In case of abnormalities, the exact cause should be identified in order to be able to take the proper measures. As far as pathogens are concerned, the **DNA turfscan®** gives quick and accurate answers to the most common problems. Based on this answer, advice can easily be formulated or brought to discussion with the customer in order to find the best solution to the problem. This rapid analysis method guarantees a quick intervention, thus allowing measures to be taken during an early stage of the problem. It is also possible to have a complete analysis of soils and substrates at the very beginning of the laying-out by introducing - next to chemical and physical analyses - a **DNA turfscan®**, thus offering an accurate answer to the question if certain soils or substrates are suitable or not.

How ?

Samples of sick or questionable sports turfs or soils can be brought in for analysis at Scientia Terrae Research Institute. In the lab, all DNA will be extracted. The next step is the specific multiplication of the DNA of fungi and oomycetes (up to one million times and more). This PCR product will then be brought into contact with the DNA array. Then follows an overnight hybridization. Afterwards, by means of a sensitive camera and a computer, the result will be ready for interpretation. The identity as well as the relative quantity of the present organisms are indicated.

How to take samples ?

The results of an analysis will for the most part be determined by the presented sample. The sample has to be representative and its delivery should take place under optimal circumstances. In other words, the sample has to give a correct image of the problems that occur in the field. For sports turfs, a bored sample (approx. Ø 10 cm) of the typical symptoms as well as a sample of the transitional stage healthy/sick is recommendable. This will allow us to sample the active, growing pathogen before the intervention of secondary pathogens who will ultimately mask the real cause of the disease. Soil samples should consist of at least 30 soil cores drawn from the upper 10 cm of soil and should be homogenized well to assure that the bulk sample is representative of the area being evaluated.

Conservation and transportation of samples :

Bored samples have to be manipulated carefully. They should be well-packed so that they remain intact during transport. Make sure that the samples do not dehydrate, this will ensure a strong visibility of the symptoms. In order to guarantee a reliable analysis, the samples should arrive at the lab as soon as possible. The samples can be brought directly to the lab or an appointment can be made for collection. They can also be sent by express mail (Taxipost, DHL,…). In that case, make sure to pay attention to the packing and take the delivery times into account (weekend delays, etc.). Finally, make sure to provide each sample with clear information about its identity and all possible details about management and maintenance.

Currently detectable organisms	
Colletotrichum spp.	anthracnose
Colletotrichum graminicola	anthracnose
Fusarium spp.	foot rot
Gaeumannomyces graminis	take-all patch
Laetisaria fuciformis	red thread
Leptosphaeria korrae	necrotic ring spot
Leptosphaerulina spp.	leaf blight
Limonomyces roseipellis	pink patch
Microdochium nivale (= Fusarium nivale)	Pink snow mold
Puccinia spp.	rust diseases
Pythium spp.	Pythium diseases
Pythium aphanidermatum	
Pythium graminicola	
Pythium irregulare	
Pythium ultimum	
Rhizoctonia solani	Rhizoctonia diseases (brown patch)
Rynchosporium orthosporum	leaf blotch (scald)
Rynchosporium secalis	leaf blotch (scald)
Sclerotinia homoeocarpa	dollar spot
Sclerotium rolfsii	southern blight
Typhula spp.	Typhula blight