



# Temperate turf

**Microdochium nivale is the universal plant pathogen of temperate turf. Wherever turf is sown, laid and managed, as a professional playing surface in temperate climates, then M. nivale is never far behind. M. nivale is the well-known and well-worn disease of grass stems and leaves popularly known in the UK as Fusarium Patch.**

Younger greenkeepers may wonder why a disease caused by a fungus named *M. nivale* is called Fusarium Patch since *Fusarium* is a fungal genus in its own right with dozens of different species.

The reason is that for many years this fungus and pathogen of turf grass plants was officially called *Fusarium nivale*.

Greenkeepers can blame mycologists (people who study fungi) to thank for this 'neo-Orwellian name game'. They will have changed the name in accordance with some obscure characteristic (like 'bumps' on the microscopic spores) which placed the fungus closer to the *Microdochium* genus than the *Fusarium* genus. In fact the change from *F. nivale* to *M. nivale* was simply the last of many name changes 'ordered' by mycologists since the fungus was discovered

and described in 1825 as *Lanosa nivalis*.

## **Microdochium in a maritime climate**

*M. nivale* performs best and leaves turf looking its worst in maritime countries with a classic mild, moist climate maintained by the benign influences of the 'surrounding' ocean and its associated currents and winds. For the UK and the Republic of Ireland, where turf damage caused by *M. nivale* is as bad as anywhere in the world, the environmental influences on which this fungus relies are The North Atlantic Drift (Gulf Stream)

## **about the author**

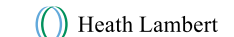


### **Dr Terry Mabbett**

Dr Terry Mabbett is a disease, pest and weed control specialist with forty years international experience covering research, advisory and journalism. His current fields of focus are professional turf and alien insect pests and pathogens of Britain's native and naturalised trees.

## Microdochium nivale: the Canadian conundrum of turf pathogens

This month Dr Terry Mabbett looks at *microdochium nivale* – with a nod to our Canadian cousins



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and predominant south-westerly (Prevailing) moisture-laden winds.

This geo-climatic preference closely matches the most favoured environmental conditions documented for *M. nivale* – namely cool to mild periods (0°C to 15°C), with leaf wetness periods greater than 10 hours a day for several days on heavily thatched and slow growing turf.

However, *M. nivale* as a pathogen of turf is a lot more versatile than this. The fungus is capable of growth even at temperatures between 21°C to 25°C and as low as -6°C. This means the disease can be a significant problem on turf in most temperate climates, e.g.

continental type climates with very cold winters but hot dry summers (central Europe and large parts of North America) and Mediterranean type climates (large parts of Australia and New Zealand) with their classic hot dry summers and mild wet winters.

*M. nivale* will clearly not be a problem all year round in these climates with their winter and summer extremes, but most will have at least one season or time of the year when weather and turf condition is conducive to high pathogen activity, manifested and expressed as Fusarium patch.

For instance, *M. nivale* is essentially a disease of Spring and Fall

(Autumn) turf in many parts of Canada and the so called 'winter grasses' (temperate grasses), used to sustain and maintain turf during late autumn, winter and spring in the Adelaide area of South Australia with its classic Mediterranean type climate.

More specifically and separately, the capacity for activity at sub-zero temperatures allows *M. nivale* to cause a completely different disease under snow cover and called 'Pink Snow Mould'.

### The Canadian Conundrum

Situation surrounding *M. nivale* on professional turf in North America, and particularly in comparison

MAIN LEFT: Pink mould develops more quickly with slower snow melt

INSET ABOVE: What lies beneath

with the UK, is especially interesting. With snow cover a certainty in many US States and Canadian provinces much more attention is paid to the pink snow mould disease dimension of *M. nivale*.

UK greenkeepers can expect turf to carry on growing right through winter to a greater or lesser extent depending on the area of the country. In contrast those managing golf courses in countries like Canada must cater for and cope with turf growth and activity completely shutting down during winter.

Turf grass plants respond to extreme low temperatures by going into 'dormancy' for their own protection and to ensure survival until the next growing season in spring. This will clearly affect the 'nuts and bolts' of any fungicide spray programme used, including timing of the last summer/autumn application and the first application in spring in anticipation of the resumption of grass growth.

For instance, if autumn fungicide application in Canada is delayed until after extensive symptoms of Fusarium patch become apparent it may be hard if not impossible for greenkeepers to get rid of the disease because grass growth is slowing rapidly with the grass plants going into dormancy.

### Separated by a common language

North American scientists and turf managers appear less 'Luddite' in their attitudes to changing the common names of turf diseases to suit the semantics of mycology and mycologists. The playwright George Bernard Shaw once said that Americans and British were separated by a common language. The potential confusion created by the many different names created for this turf disease either side of the Atlantic shows this to be true.

North American scientists and turf managers now invariably talk about 'Microdochium Patch'. The turf industry in Britain allowed mycologists to change the name of the fungus from *F. nivale* to *M. nivale* then carried on calling the disease Fusarium Patch as though absolutely nothing had happened.

The Canadians are in an even bigger quandary and conundrum being faced with the choice of the different spellings used in common names for turf diseases either side of the Atlantic Ocean (in US and UK).

In Britain we talk about 'Pink Snow Mould' while to the Americans it is 'Pink Snow Mold'. Simi-

larly the Americans refer to a turf disease caused by *Typhula* spp as 'Gray Snow Mould' whereas in Britain we call the disease 'Grey Snow Mould'. Prevailing advice in Canada is to use either but not to mix and match. Thus 'Gray Snow Mould' is a definite 'no-no'.

### Pink Snow Mould or Microdochium Patch

Whether or not Pink Snow Mould and Microdochium Patch should be considered as different and separate diseases, albeit caused by the same pathogen, is a vexed question. It has certainly exercised the mind of Dr Tom Hsiang at the University of Guelph in Ontario, Canada, a country which clearly knows more and better than most about deep prolonged snow cover and the development of Pink Snow Mould under snow cover. The disease is more pronounced under longer snow cover and slower melts in spring enhance disease development.

There was an attempt in the late 1990's to consolidate all common names (Fusarium patch, Microdochium patch and Pink Snow Mold) into 'Pink Snow Mold'. But as Dr Hsiang points out this began to cause a very awkward and indeed meaningless situation for regions of North America that very seldom experience snowfall, yet were having outbreaks of what was called a 'snow mould disease'.

A more recent and equally unsatisfactory trend, especially in the U.S., uses Microdochium Patch for symptoms caused by *M. nivale*, whether they developed with or without snow cover.

Message from Canada is that despite Microdochium patch and Pink Snow Mold being caused by the same fungus the conditions under which they develop and spread and the type of symptoms expressed are entirely different. As such they should be regarded as completely different and separate diseases of turf.

However, the real clincher in Canada comes in spring and especially if the turf went into winter dormancy carrying extensive symptoms of Microdochium patch, and subsequently developed Pink Snow Mold under prolonged snow cover. As the snow melts in spring and the grass resumes its growth, classic symptoms of Microdochium patch develop on the turf grass around the edges of Pink Mold patches.



ABOVE: *Microdochium nivale* as Fusarium patch the disease caused in the absence of snow cover. Picture courtesy Vitax

BELOW: Nothing is patch on Fusarium when it comes to universality. Picture courtesy Syngenta

