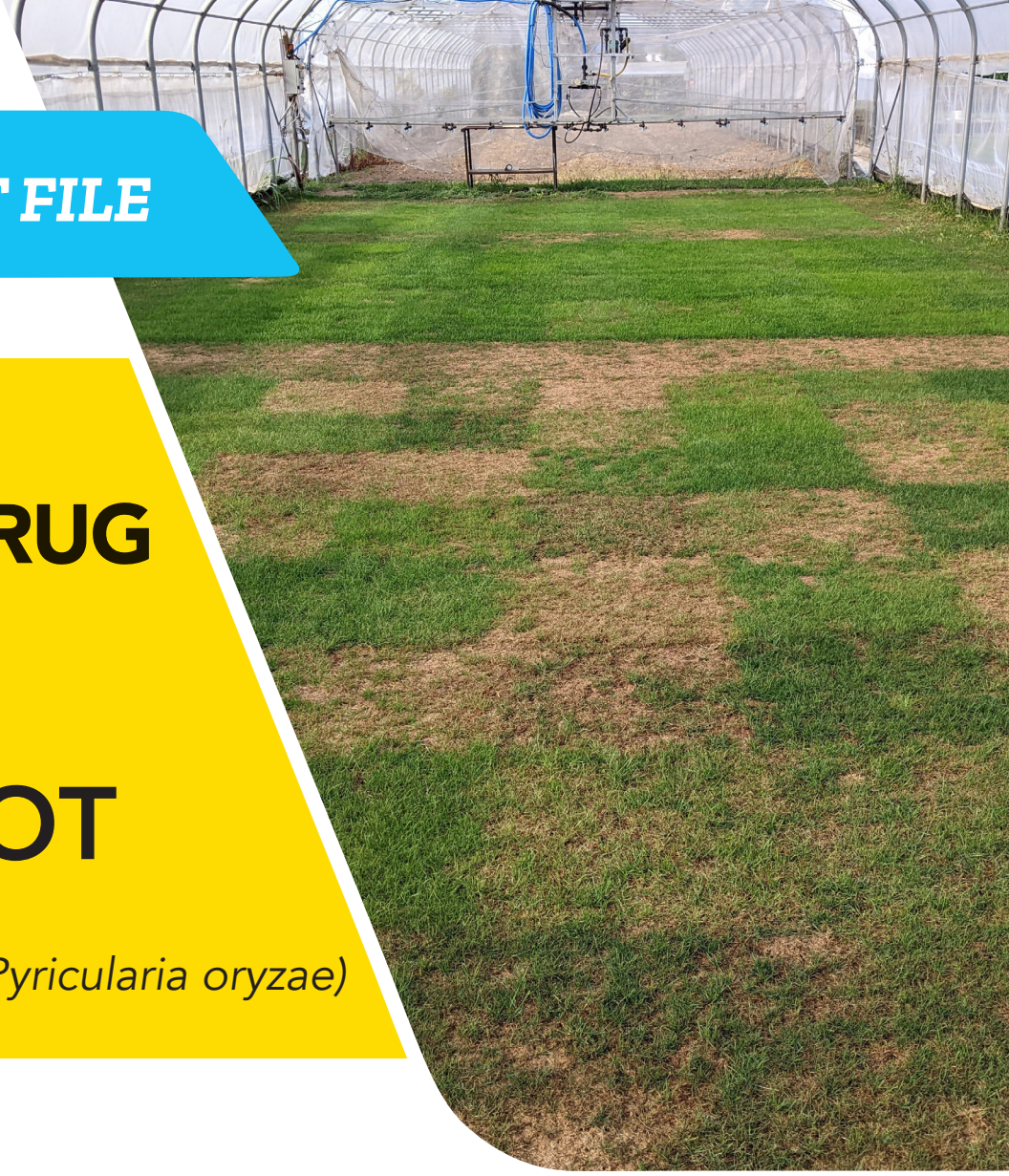
DISEASE FACT FILE



BARENBRUG

GREY LEAF SPOT

(Pyricularia grisea / Pyricularia oryzae)

Disease Background

Grey Leaf Spot (GLS) is a fungal disease caused by a *Pyricularia* species of fungus with confusing taxonomy. Both *Pyricularia grisea* and *Pyricularia oryzae* are readily cited as the causal pathogen for the (same) turfgrass disease.

The most affected cool-season hosts are perennial ryegrass (*Lolium perenne*) and tall fescue (*Festuca arundinacea*). GLS also affects warm-season grasses, most notably St. Augustine (*Stenotaphrum secundatum*) and kikuyu (*Pennisetum clandestinum*). GLS was first isolated in the UK as the cause of damage to a perennial ryegrass stadium pitch in London as recently as 2020, and it is now expected to become a major concern on ryegrass in sand-based stadia constructions in warmer parts of the UK.

GLS can develop aggressively in young plants, with 4–5-week-old seedlings being extremely susceptible to infection. The development of the disease often occurs on areas in full sunlight – shaded areas of a stadium would be expected to be less affected initially.

Initial symptoms are often small, dark brown spots or lesions on the leaf (less than a few mm in size) and stem tissues that may appear 'watersoaked'. Lesions will increase in size and number as the disease develops. This can lead to the rapid appearance of patches of dead turf and in extreme cases, outbreaks can result in the complete destruction of a ryegrass pitch in a few days. In these instances, the signature velvet-like grey spores offer an unmistakable diagnosis. High temperatures, combined with moisture on the leaf and high humidity are trigger-points for aggressive outbreaks.

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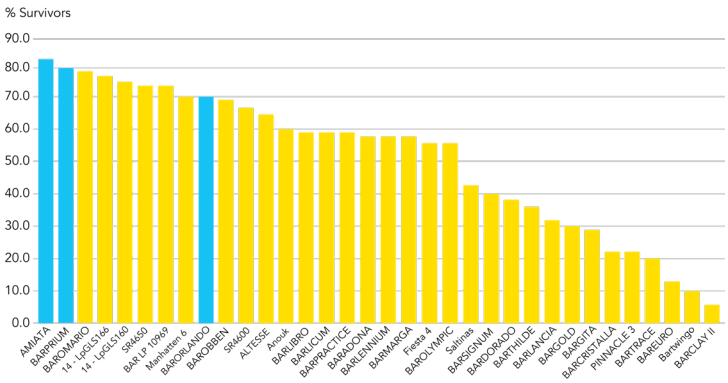
Disease Tolerance in Grass Breeding

GLS was first seen in USA on perennial ryegrass in the early 1990's. A lot of breeding focus and plant screening has since been applied to this disease, given how damaging it can be. Several USA-bred grasses offer good disease tolerance, although their susceptibility to disease inoculum from sources in Europe appear to be more variable. Another major disadvantage of USA cultivars is their poor performance in wear/traffic trials in the UK and other northern European countries.

An extensive screening and selection process in laboratory and field trials in southern Europe has been undertaken by Barenbrug and independent partners Landlab. Figures 1, 2 and 3 illustrate some of these trials. The trials exhibit robust correlation despite different methodologies (field trials; *in vitro*; inoculated and natural infections), which should give turf managers high confidence in the results and conclusions.

Several GLS-tolerant cultivars have hence been identified from Barenbrug's global genetic portfolio. ***Amiata***, ***Barprium*** and ***Barorlando*** have been selected to offer best performance in the UK market – delivering high levels of disease tolerance with minimal compromise in UK conditions under intensive wear. These three varieties are **European-bred, diploid perennials** and feature in the Sport Range blend **Elite Defence**. ***Barorlando*** is a previous #1-rated variety in BSPB/STRI Turgrass Seed Table S1 for winter wear performance in UK conditions.

Figure 1 – GLS tolerance of a range of cultivars, analysed in climate rooms with inoculated disease (internal Barenbrug trials). *Amiata*, *Barprium* and *Barorlando* are highlighted.



Situations of High Risk

- Stadium environments with perennial ryegrass pitches
- High levels of Nitrogen, particularly applied through a water-soluble source
- Young plants, particularly 4-5 week-old seedlings
- High temperature >25*C, allied with high humidity and moisture on leaf
- Full sunlight for initial infection

Reducing Risk of Grey Leaf Spot – Integrated Turf Management

- Reduce humidity at turf level
- Stadium cooling fans can be applied to reduce temperature and dry out turf
- Utilise a blend of GLS-tolerant cultivars of perennial ryegrass or consider an alternative grass species
- Manage moisture levels in turf precisely, keeping in mind young seedlings are drought prone in sand pitches
- Manage nutrient availability – controlled release nitrogen is prudent
- Fungicide applications in environments of concern prior to highest disease pressure are advisable as a precautionary measure
- Disinfect equipment before use, particularly if previously from a suspected source of GLS

Figures 2 and 3 – photographs from an independent field trial at Landlab in Italy. *Amiata* and *Barprium* show strong tolerance (*Barorlando* not included in trial).