



**References:**

(BB) Borregaard BioPlant, Helsingforsgade 27B,  
8200 Aarhus N, Denmark

(GCN) Ghita Cordsen Nielsen, Agricultural Advisory Centre,  
Udkærsvvej 15, 8200 Aarhus N, Denmark

(STRI) The Sports Turf Research Institute, St. Ives Estate,  
Bingley, West Yorkshire BD16 1AU, England

(WG) Wolf-Garten GmbH & Co KG, EUROGREEN,  
An der Haselmauer 3, 56472 Nisterau, Germany

**Editing:**

Karin Berit Normann Hansen – Asbjørn Nyholt  
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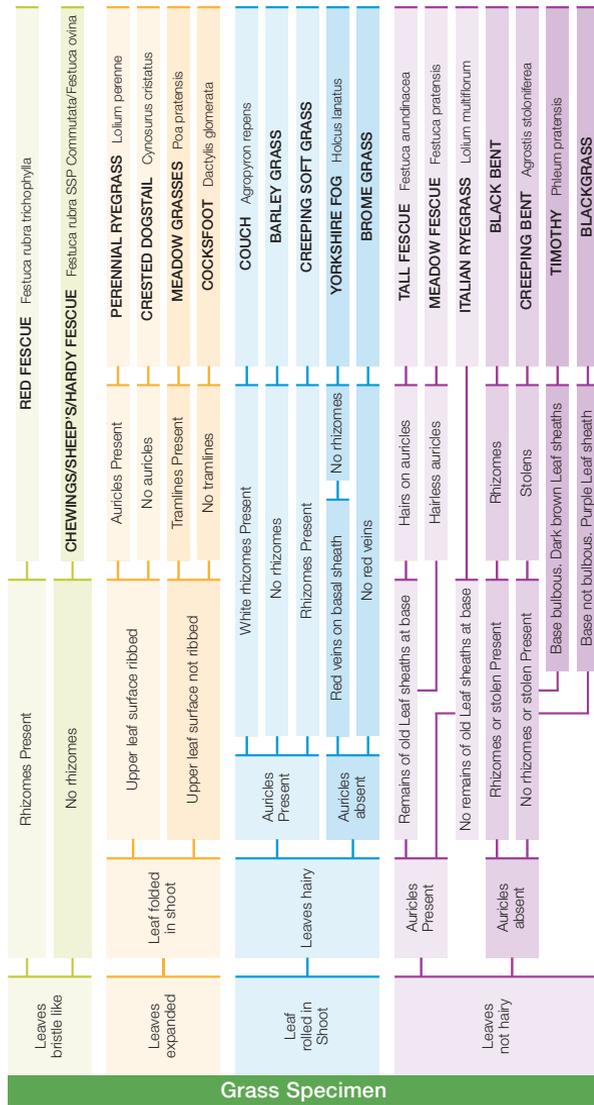
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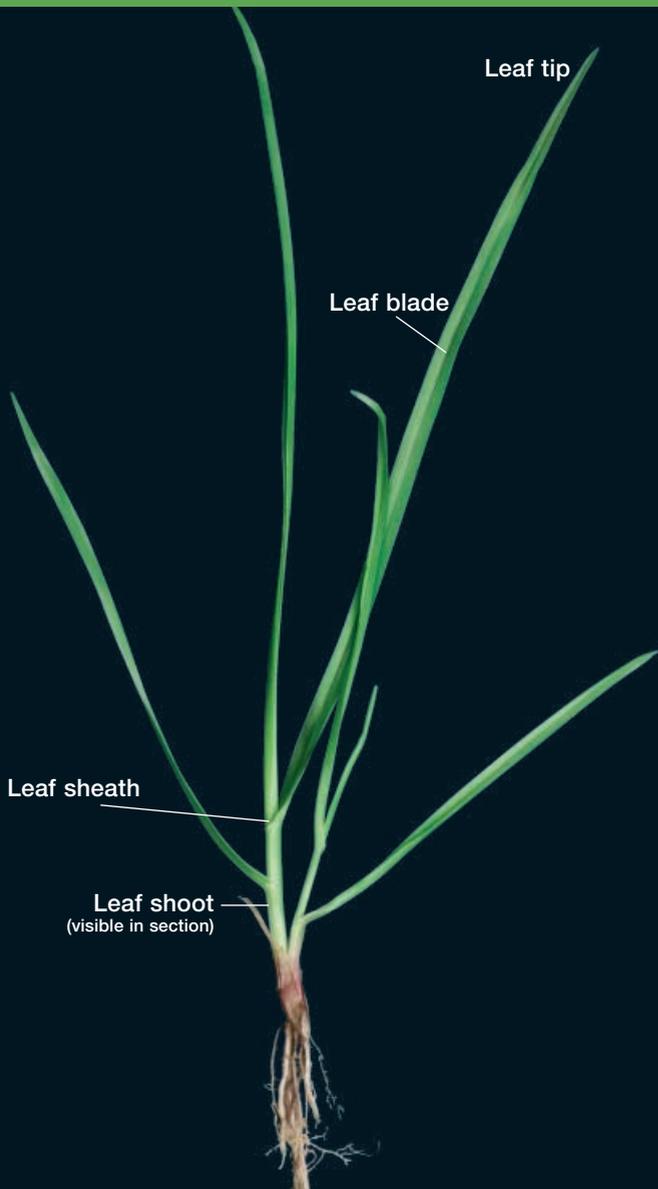
Thorn Farm, Inkberrow, Worcestershire, WR7 4LJ  
Telephone: 01386 791102 Fax: 01386 792215  
Email: amenity@dlf.co.uk

# A Guide to Amenity Grasses

Species, diseases and pests







### The leaf bud

Rolled



Folded



### The leaf tip

Boat shaped



Pointed



### The leaf blade

Smooth or ribbed blade  
with or without keel



Leaf blade with two pale  
parallel lines



### The ligule

Long or short ligule



### Leaf sheath/auricle

Large or small



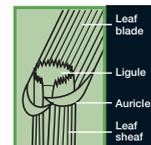
### The stem

Can have nodes



Leaf sheath is the part  
of the grass leaf which  
grasps the stem.

Auricles are small claw  
or ear-like outgrowths at  
the junction of leaf sheaf  
and blade.

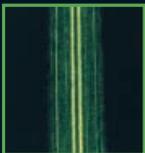




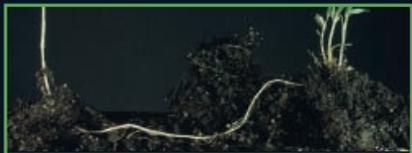
Smooth stalked meadow grass has stiff blue-green leaves with boat-shaped tip.



The short ligule is visible on the left leaf.



Two pale parallel lines are visible along the leaf's midrib.



Meadow grass which has formed underground rhizomes.



Perennial ryegrass has strong dark green leaves. The underside of the leaf is glossy.

Clear leaf sheath/auricles in perennial ryegrass.



Leaves and stems reddish at base.



### Smooth-stalked meadow grass

**Latin name:** *Poa pratensis*

**Seed weight:** 0.2g/1000 seeds

**Germination:** 3-4 weeks

**Shoot density:** 200-350 shoots/100cm<sup>2</sup>

**Cutting height:** Normal: 20-35mm. Not less than 8mm.

**Growth:** In tufts with rhizomes.

**Distinguishing features:**

Leaves dark green or with bluish bloom.

Of uniform width, abruptly terminating in boat-shaped tip. Two pale parallel lines visible along midrib when leaf is held up against light.

Underside of leaf with keel.

Leaf blade folded in the shoot.

Ligule short, rounded, 1-3mm long.

Mown turf rarely flowers.

**Properties:** Forms an attractive carpet with good wearing qualities and regenerative ability. Slow to establish. Ideal for turf production, tees and sports areas.



### Perennial ryegrass

**Latin name:** *Lolium perenne*

**Seed weight:** 2.0g/1000 seeds

**Germination:** 1-2 weeks

**Shoot density:** 200-350 shoots/100cm<sup>2</sup>

**Cutting height:** Normal: 28-40mm. Not less than 8mm.

**Growth:** In tufts.

**Distinguishing features:**

2-5mm strong dark green leaves.

Widest at base, width gradually decreasing to fine tip.

Upper leaf surface dull with clear ribs.

Underside of leaf glossy with prominent keel.

Leaves and stems reddish at base.

Leaf blade folded in the shoot.

Ligule up to 2mm long.

Clear sheath/auricle.

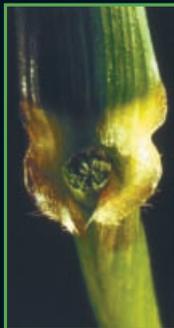
**Properties:** Perennial ryegrass has very good wearing qualities and germinates quickly. The species is thus highly suitable for sports areas and hard wearing lawns. Ideal for overseeding because of its high germination in a range of soils.





The underside of the leaf has very clear ribs.

Some varieties do form rhizomes.



Small, narrow spreading auricles, minutely hairy along the edge.

### Tall fescue

**Latin name:** *Festuca arundinacea*

**Seed weight:** 1.8-2.5g/1000 seeds

**Germination:** 2-3 weeks

**Shoot density:** 200 shoots/100cm<sup>2</sup>

**Cutting height:** Normal: 30-40mm. Not less than 10mm.

**Growth:** In tufts.

**Distinguishing features:**

Strongly veined leaf.  
Blade rolled when young.  
Large flat mature leaf.  
Purple red leaf sheath.  
Ligules short.  
Large auricles.  
Hairy.

**Properties:** Very good resistance to extremes of heat and cold. Very high drought tolerance. Moderate to good wear tolerance. Some varieties do form rhizomes.



### Sheep's fescue/Hard fescue

**Latin name:** *Festuca ovina*

**Seed weight:** 1.0g/1000 seeds

**Germination:** 2-3 weeks

**Shoot density:** 800-1000 shoots/100cm<sup>2</sup>

**Cutting height:** Normal: 15-35mm. Not less than 5mm.

**Distinguishing features:**

Very fine leaved plant with high shoot density.  
Leaves are thread like, hairless with a deeply ridged upper surface.  
Leaves greyish to blue green colouration.  
Characteristically forms whorls as a mature plant.  
Auricles are described as absent or much reduced, ligule is very short.  
Rhizomes absent.

**Properties:** A highly drought tolerant, low nutrient demand grass. Some cultivars tolerate very close mowing. A highly flexible species used in a diverse range of mixtures from golf to moor land. It is particularly useful in low maintenance situations and has a tolerance to a wide range of soils from acidic to highly basic. Visually attractive if left uncut.





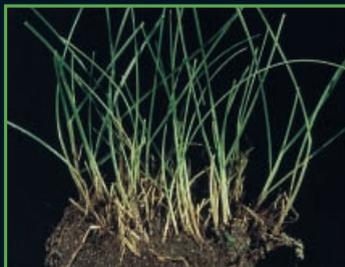
Tuft formation in red fescue. Plant with very fine leaves.



Red fescue without rhizomes. Roots bunched together.



Filamentous leaf with smooth underside.



Red fescue with short rhizomes. Plant with filamentous leaves.

Red fescue with short rhizomes.



### Chewings fescue

Latin name: *Festuca rubra commutata*

Seed weight: 1.0g/1000 seeds

Germination: About 2 weeks

Shoot density: 450-800 shoots/100cm<sup>2</sup>

Cutting height: Normal: 20-35mm. Not less than 5mm.

Growth: In tufts.

Distinguishing features:

Leaves fine, stiff and filamentous.

Young leaf folded in shoot.

Ligule short, blunt, difficult to distinguish.

Roots bunched together.

No rhizomes.

Properties: The high shoot density and tolerance to close cutting makes the species particularly suitable for greens, tees, fairways and ornamental lawns. Requires minimal water and fertiliser. Tolerates acidic soils.



### Slender creeping red fescue

Latin name: *Festuca rubra trichophylla*

Seed weight: 1.0g/1000 seeds

Germination: About 2 weeks

Shoot density: 400-700 shoots/100cm<sup>2</sup>

Cutting height: Normal: 20-35mm. Not less than 5mm.

Growth: Short rhizomes.

Distinguishing features:

Leaves stiff and filamentous.

Young leaf folded in shoot.

Ligule short, blunt and difficult to distinguish.

Short rhizomes.

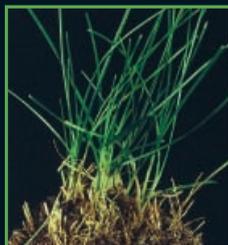
Properties: The high shoot density and tolerance to close cutting makes the species particularly suitable for greens, fairways and ornamental lawns. Moderately salt tolerant. The runners can regenerate cover in worn areas. Mixes well with *F. r. commutata*.



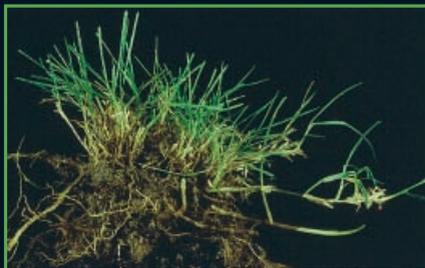


Comparison of the three red fescue types. Left: without rhizomes; middle: with short rhizomes; right: with long rhizomes.

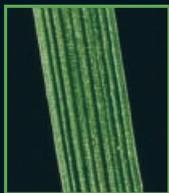
Filamentous leaves in red fescue.



Red fescue with long rhizomes.



Browntop bent grass. Rhizomes are visible.



Leaf with clear ribs.

Ligule short and evenly truncated.



### Strong creeping red fescue

Latin name: *Festuca rubra rubra*

Seed weight: 1.0g/1000 seeds

Germination: About 2 weeks

Shoot density: 250-450 shoots/100cm<sup>2</sup>

Cutting height: Normal: 20-35mm. Not less than 12mm.

Growth: Long rhizomes.

Distinguishing features:

Leaves stiff and filamentous. Young leaf folded in shoot. Ligule short, blunt and difficult to distinguish. Long rhizomes.

Properties:

Rhizomatous growth stabilises root zones and provides some recovery from damage. This species is used in turf production (for binding) and areas not subject to very close mowing. Strong creeping red fescue is not suited to close mown areas such as golf greens. It is however used in some tees and fairway mixtures as it has some regenerative capacity due to its rhizomes.



### Browntop bent grass

Latin name: *Agrostis capillaris syn. tenuis*

Seed weight: 0.1g/1000 seeds

Germination: 2-3 weeks

Shoot density: 400-600 shoots/100cm<sup>2</sup>

Cutting height: Normal: 4-5mm; good durability at 5mm.

Growth: Mainly short rhizomes.

Distinguishing features:

Leaves matt green and broadest at base, gradually narrowing to a fine tip. Leaf with parallel venation, no keel. Upper surface and lower surface of similar appearance. Leaf rolled in shoot. Ligule short, truncated, 0.5-2.0mm long. Short rhizomes, to lesser degree stolons.

Properties:

Ideal for greens in mixture with *F. r. commutata* and *F. r. trichophylla*. Does best under relatively poor growth conditions. Over-fertilising, over-watering and compact or waterlogged soil will result in displacement of the species by annual meadow grass.





Creeping bent grass with surface runners.

Left: creeping bent grass with long toothed ligule.

Right: browntop bent grass with short ligule.



Stem with pointed leaves and violet nodes.



Left: annual meadow grass with pale green leaves and silver seed heads. Right: smooth stalked meadow grass with strong blue-green leaves.

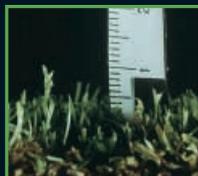
Stem with long ligule.



Annual meadow grass has pale green leaves with transverse lines.



Annual meadow grass with seed heads in turf cut below 5 mm.



### Creeping bent grass

Latin name: *Agrostis stolonifera*

Seed weight: 0.4g/1000 seeds

Germination: About 2 weeks

Shoot density: 400-600 shoots/100cm<sup>2</sup>

Cutting height: Normal: 3-4mm. Not over 15mm.

Growth: Surface runners.

Distinguishing features:

Leaves matt grey-green and broadest at base, gradually narrowing to fine tip.  
Leaf with ribs above.  
Leaf rolled in shoot.  
Ligule rounded, lightly toothed, up to 5 mm long.  
Can root at nodes.  
Numerous stolens.

Properties:

Of the various species, this species tolerates the closest cutting. Relative to browntop bent grass, requires intensive management, fertilising and watering. Has a long dormant period in winter.



### Annual meadow grass

Latin name: *Poa annua*

Seed weight: 0.4g/1000 seeds

Germination: 1-2 weeks

Shoot density: Very dense in tended greens.

Cutting height: Down to 3mm.

Growth: Forms tufts.

Distinguishing features:

Leaves pale green and of uniform width, abruptly terminating in boat-shaped tip.  
Leaves often with transverse lines.  
Two pale parallel lines visible along midrib when leaf held up against light.  
Underside of leaf with keel.  
Leaf folded in shoot.  
Ligule rounded, gently serrated, up to 5mm.  
Can flower even on greens cut down to a few mm.

Properties:

Common weed. Undesired species in all lawns. Often occurs on soils with poor structure with a thatch layer. Benefits from over-fertilising, especially with nitrogen and phosphorus and from heavy watering. Highly variable species.





Early attack by anthracnose. The attacked plants are yellow (WG).

Attack by anthracnose. The turf is thin with yellow and red-brown plants (STRI).



Fairy ring **type 1** forms rings in which the turf withers and dies. This ring is surrounded by two rings with strong growth of the grass (STRI).



Fairy ring **type 2** forms rings with strong grass growth (STRI).

Fairy ring **type 3** apparently does not affect the grass, but forms rings of mushrooms or puffballs.



## Anthracnose/Basal rot

**Latin name:** *Colletotrichum graminicola*

**Symptoms:** Early attacks are evident as a yellowish discoloration of individual plants throughout the turf. Continued development of the disease depends on temperature and humidity.

In humid weather at temperatures below 20°C, 1-3cm irregular yellowish spots are formed. The youngest leaves in plants which have been attacked are often yellow-orange. Root rot can also occur. Plants which have been attacked can therefore easily be pulled out of the ground.

Large irregular yellow to red-brown spots are seen in hot humid weather (> 25°C). When the plants wither away, the turf becomes thin with bare patches.

Anthracnose often occurs where the soil has become compact, lacks fertiliser and is wet.

**Hosts:** Can attack all turf grass species, but annual meadowgrass is particularly susceptible.

**Time:** Attacks occur especially from June to August, but can occur throughout the year.

## Fairy rings

**Latin name:** *Marasmius oreades*, *Scleroderma spp.*, *Hygrophorus spp. etc.*

**Symptoms:** Fairy rings can vary greatly in size from a few centimetres in diameter upwards, but on most turf the limit is often a diameter of 5-10 metres. Fairy rings are classified in different types according to their appearance.

**Type 1:** Forms rings where the grass withers and dies. A dark green ring with strong grass growth is formed on both sides of this ring. There may be mushrooms or puffballs around the ring.

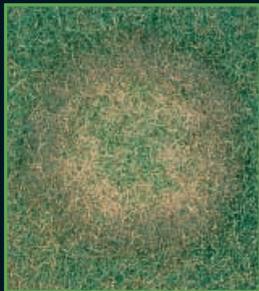
The white fungal mycelium with its typical mouldy smell is visible in the soil under the withered plants. This type of fairy ring can cause major damage.

**Type 2:** Forms dark green rings in which the grass grows more strongly than the rest of the turf. Mushrooms or puffballs may grow around the ring.

**Type 3:** Forms rings of mushrooms or puffballs, but there is no visible effect on the grass.

**Hosts:** Can attack all species of turf grass.

**Time:** Once present, fairy rings are often a problem for a number of years.



Fusarium attack. The plants are waterlogged (STRI).

Spots under attack by pink snow mould grow and coalesce (STRI).



Attack by typhula blight. The grass is dried and adhering together in a paper-like structure. Golden brown bodies are visible in the middle of the picture (GCN).



Golden brown bodies on attacked plants (GCN).

### Fusarium patch/Pink snow mould

**Latin name:** *Microdochium nivale*/*Fusarium nivale*/*Gerlachia nivalis*

**Symptoms:** Damage appears not only after snow, but also in humid weather at temperatures just above freezing. Patches of 4-6cm with grey waterlogged plants are seen when the attack commences. The patches spread to form plate-size areas which coalesce. A dark brown rim is often seen along the outermost edge where the infection is active. A grey-white to pink cottony mycelium forms over the attacked area when the humidity is high enough. This resembles a paper-like layer after snow.

**Hosts:** Can attack all species of turf grass, but bent grass, annual meadowgrass and perennial ryegrass are particularly susceptible.

**Time:** Fusarium is the most important fungal disease of turf grass at temperatures below 3°C with high humidity. The damage is seen throughout autumn and winter and after any snow has melted in March. Heavy rainfall can dislodge spores and infections can follow run off patterns.

### Grey snow mould/Typhula blight

**Latin name:** *Typhula incarnata*

**Symptoms:** The infection spreads rapidly under snow, where the humidity is high and the temperature around freezing point. The little grey spots are visible on the turf when the snow melts. The individual grass plant dries out and withers to a dry papery structure. If the humidity is high enough, a greyish-white mycelium is formed. The areas which have been attacked are often 50cm wide. A typical feature of grey snow mould is the golden brown sclerotised bodies the size of a pinhead. The sclerotised bodies are found on dried-out leaves and at the base of the roots. The attacked areas rarely die, but regenerate relatively quickly in spring.

**Hosts:** Can attack all turf grass species, but bent grass, annual meadowgrass and perennial ryegrass are particularly susceptible.

**Time:** Attacks occur from October from March.



The characteristic reddish filaments formed at the ends of attacked plants (STR).



The attacked area with red filaments has pale brown to reddish spots (STR).



Rust attack on meadowgrass (GCH).



Rust attack on ryegrass (GCN).

### Red thread/Corticium disease

**Latin name:** *Laetisaria fuciformis/Corticium fuciforme*

**Symptoms:** Attacks are first evident as small irregular 2-5cm pale brown spots which later become straw-coloured. Healthy plants are often seen in among those under attack. The spots can overlap and form extensive areas. The fungus subsequently develops the typical reddish filaments at the ends of the attacked leaves, forming an antler-like structure. The attacked areas thus gain a characteristic reddish tinge.

**Hosts:** Can attack all species of lawn grass, but is most common on ryegrass and red fescue.

**Time:** Damage is seen from March to October. Attacks are promoted by humid weather and a temperature of 16-22°C.

### Rust

**Latin name:** *Puccinia and Uromyces spp.*

**Symptoms:** Early attacks are visible as small pale yellow spots on the leaves. The spots become bigger as the fungus grows into the leaf. Large numbers of yellow, brown or black microscopic spores are subsequently formed. The spores' appearance depends on the type of rust. The typical "fine powder" or "dust layer" is seen on the leaves when the spores are released. Turf which has been heavily attacked by the disease can have a yellowish or brownish colour. The spores are spread by the wind and by people and machinery, and the disease can thus spread rapidly to other areas. The attack weakens the plants and the turf becomes thin.

**Hosts:** Can attack all species of turf grass.

**Time:** Damage is seen from June to September. Rust fungi typically develop at temperatures above 20°C on stressed plants.



Ring structures formed in attack by take-all patch (STRI).



An older take-all patch ring formation with the typical reddish-brown to bronze colour (WG).



The clear spiracles and pointed outgrowths on the crane fly larva (GCN).



Crane fly larvae are grey-brown and about 4cm long when fully grown (GCN).



The crane fly is a big slender midge with a body length of about 2cm (GCN).

### Take-all patch/Ophiobolus patch

**Latin name:** *Gaeumannomyces graminis*

**Symptoms:** Attacks are seen as irregular 5-10cm dark green spots which later become pale to reddish-brown or bronze-coloured. A ring structure is formed in the turf when the attack becomes more serious. The ring recurs in the same place year after year, but grows in size. The fungus attacks the plants' stems and roots, which then wither and are easily pulled out of the ground. The roots have a typical black-brown colour. There is a marked change in the composition of the turf inside the ring. Instead of the existing species mix, red fescue and broad-leaved forms of annual meadowgrass are typically found together with weeds such as pearlwort/sagini and chickweed. This change is permanent. The disease is a particular problem on newly established greens in the first 3-4 years.

**Hosts:** Take-all patch attacks mainly bentgrasses, but ryegrass and meadowgrass can also be attacked.

**Time:** Damage is seen from May to October. The disease is a particular problem in cold wet years.

### Crane fly

**Latin name:** *Tipula paludosa*

**Symptoms:** Adult crane flies do no damage. The larvae, which hatch from August to September, chew the plants' roots, shoots and leaves. Attacks are evident when the plants adopt a "dirty brown" colour. The plants wither and the turf becomes thin. The larvae eat the roots during the day and on hot humid nights they come up to eat the lower parts of the foliage. Frayed areas are seen on roots, shoots and leaves. Major damage to the lawn can often be seen when rooks and other crows have been pecking after the larvae. The birds can often scrape up extensive areas of the lawn.

The crane fly is very common and widespread. There are also other species of crane fly.

**Hosts:** Can attack all species of turf grass.

**Time:** Minor damage is seen in autumn from September, when the eggs hatch and the little larvae begin to eat the plants. Major damage is seen in spring from April, when the bigger larvae have big appetites. Pupation is in late June.



Fever fly larvae have a dark head and thorny growths on the body (GCN).

Fever fly attack. Plants are bitten off just below the surface of the ground (GCN).



The adult fever fly looks like a typical fly and is 5-6mm long and very hairy (GCN).



Frit fly larvae are about 4-5mm long without head and appendages (GCN).

Frit fly attack in ryegrass. The main shoots are yellow (GCN).



Adult frit flies in a container. The flies are shiny black with brick-red eyes and are about 2-2.5mm long (GCN).

## Fever fly

**Latin name:** *Dilophus febrilis*

**Symptoms:** The larvae often eat dead plant parts at the base of the grass, but if the number of larvae becomes so large that there is not enough food, living plants can be consumed. The plants are bitten off just below ground level, after which they wither and can easily be pulled up. The larvae usually appear in the ground in large numbers like maggots in a piece of meat. Extensive damage results when birds peck into the grass in search of the larvae. Large areas of grass can be cut up.

**Hosts:** Can attack all species of turf grass.

**Time:** Fever flies have two generations a year.

The first generation causes damage in June and July. The second generation causes damage in autumn and spring until the end of April, when the larvae pupate.

## Frit fly

**Latin name:** *Oscinella frit*

**Symptoms:** The adult frit fly does no damage. The damage occurs when the larvae feed on the plant's main shoot and the roots. The plant cells die and the main shoot becomes yellow and wilts away. The main shoot can easily be pulled out of the plant and the damage done by the larva can be seen at the bottom of the shoot.

The plant stops growing upwards and forms side shoots. When the larvae feed on the roots, the plants become yellow and wither and can easily be pulled out of the ground.

**Hosts:** All turf grasses can be attacked, but the ryegrasses, red fescue and the meadow grasses are most susceptible.

**Time:** Frit fly larvae hatch three times a year, in May-June, July-August, and August-September. The third generation causes the greatest damage in September and October.



June beetle larvae are about 1-2cm long, whitish with 3 pairs of legs and a shiny brown head. The larvae usually lie in a C-shape (GCN).



June beetle larval attack on green (BB).

The adult June beetle is about 1 cm long, green in front with shiny brown elytra (wing covers) (GCN).



Leaf weevil larvae are about 8mm long, white, limbless, with brown head (GCN).

Leaf weevil larvae bite off the roots just below ground level so that the grass can be rolled up like a carpet (GCN).



The adult leaf weevil is about 6-8mm long, brown-green with a metallic sheen (GCN).

## June beetle

**Latin name:** *Phylloptera horticola*

**Symptoms:** Damage occurs when the larvae chew on the plants' roots. The plants become yellow and wither. The June beetle lays its eggs in May-June. The egg hatches in 2-3 weeks and the first two larval stages move deep into the soil (15cm) and do not chew the roots extensively. The third larval stage appears about 1st August. The larvae then move up into the top layer of soil and damage grasses throughout autumn. They overwinter deep in the ground and pupate in spring. Extensive damage occurs when rooks and other crows peck into the grass to find the larvae. Large areas of grass can be scraped up.

**Hosts:** Can attack all turf grass species.

**Time:** Minor damage is seen in autumn, when the little larvae begin to feed on the plants. Major damage is seen in spring, when the bigger larvae have big appetites. Pupation is in May.

## Leaf weevil

**Latin name:** *Phyllobius pyri*, *P. maculicornis* and *P. vespertinus*

**Symptoms:** The adults do no damage. Damage occurs when the larvae feed on the roots. The roots are chewed just below ground level, so that the grass can almost be rolled up like a carpet. If the plants are pulled up, the larvae can be seen in or immediately below the surface of the soil. Early attacks are evident as individual dead shoots or several withered plants. Bigger or smaller spots are seen on the turf, especially in areas with lighter soils.

**Hosts:** Can attack all species of turf grass, but the fine-leaved species such as fescues are especially susceptible to attack.

**Time:** Damage is most often seen in August and September. Major attacks can occur in June and August in particularly dry years. Pupation is from the end of September.