Pests and diseases

Newly-sown pastures are more vulnerable to pests and diseases than well-established grassland and can be badly affected by specific problems.

Assessing Grassland Pests

Frit fly, slugs, leatherjackets and chafers are the most important pests of ryegrass, while pest damage to white clover is primarily from slugs and sitona weevils.

In addition to the main pasture-land pests, aphids and nemotodes can also cause significant problems from time to time.

Frit Fly

Frit fly larvae, from eggs laid on or near seedlings or mature grass plants, bore into the base of seedlings and tillers, causing death or greatly reduced vigour.

Populations in new sowings can reach several thousand per square metre and exceed the number of seedlings present.

Italian ryegrasses are more susceptible than perennials and mature crops of all ryegrasses are less affected than new seeds.

Frit fly populations are greater in grassland than under arable cropping, with larvae migrating from ploughed-up swards to infest new seeds.

Direct-drilled fields are most at risk.

Chlorpyrifos is the recommended chemical treatment, although it will also reduce populations of carabid beetles valuable in keeping on top of many insect pests.

Sowing outside the main periods of egg-laying and allowing a gap of at least four weeks between sward destruction and re-seeding can give valuable control.

Selecting varieties of Italian ryegrass reported to be more resistant to attack may also be useful.

Slugs

Slugs prefer white clover to ryegrass, rasping away the leaf tissue in strips between the veins.

Seedlings are more susceptible than mature plants but feeding on the leaf buds in spring can cause damage and reduce output.

White clover slot-seeded into grass swards is particularly vulnerable.

Molluscides based on metaldehyde and methiocarb are the most effective treatments.

White clover varieties showing greater resistance to slugs should be chosen for conditions under which large infestations are most likely, in heavy land and where soils have been loosely tilled without adequate compaction.
**Leather-jackets**

The soil-dwelling larvae of craneflies, leather-jackets feed on many grasses and legumes, causing the greatest damage in the spring.

Although they mainly attack root tissue, they will consume leaves where accessible.

Plants are severed just below ground level, resulting in patches of yellowing plants which invariably die.

Treatment is with chlorpyrifos.

Some biological control agents are showing promise as alternatives.

**Chafers**

The larvae of several species of chafer beetle can also cause damage to grassland in various parts of the UK.

The adults are 8-10 mm long with a green head and thorax and reddish brown wing cases: The grubs are white and about 18-20 mm long when fully grown.

The feeding of the larvae produces patches of poorly grown grass that may turn very brown in dry weather.

Damage is most likely to be seen in September–October.

Substantial bird activity may indicate infestation, as they actively search out the grubs.

Once infested, pastures tend to be re-infested in subsequent seasons unless they are treated with an appropriate agrochemical.

**Sitona Weevils**

Sitona weevils cause characteristic notching at the leaf margins of clovers and lucerne.

Weevils are abundant in warm, dry weather, with April and August sowings particularly vulnerable.

The adult weevils attack the first leaves and cotyledons of seedlings while their larvae can damage root nodules, reducing the plant’s ability to transfer N.

Larval feeding can also pre-dispose the plant to damage by crown or root-rotting fungi.

No insecticide is specifically approved for weevils but treatment for frit fly or leather-jackets is likely to reduce the adult population.

**Assessing Grassland Diseases**

The main diseases of both ryegrass and clover are caused by foliar fungal infections and viruses.

**Ryegrass Fungal Diseases**

Crown rust, leaf blotch and powdery mildew are the most common fungal diseases found on the leaves of all grass species.

The recommended treatment for serious infections of all these pathogens is the fungicide, propiconazole.

Crown rust strikes mainly in late summer and early autumn and results in distinctive yellow-orange pustules on the leaves.
Improvement through grassland management

It occurs most frequently where warm, dry days are followed by dewy nights.

Infections can reduce forage yield and quality, together with the competitive ability of plants.

They have also been reported to reduce palatability.

**Leaf blotch**, caused by five different species of fungi, is characterised by brownish spots of varying sizes across the leaves.

Infections can be seed borne and are more severe in Italian ryegrass and during cool, moist weather in spring and autumn.

**Powdery mildew** attacks most grasses, resulting in greyish white fungal blooms on the leaves.

Most severe in dense crops and following dry weather, infections can reduce forage yield and quality.

**Clover Fungal Diseases**

White clover suffers from black blotching, leaf spotting or pepper spotting caused by a number of fungal pathogens but by far the most important disease is clover rot.

**Clover rot** affects lucerne and red as well as white clover and can reduce crop yields significantly.

Infection begins in the autumn as brown spots and spreads within the stems to the crown during mild weather, causing plant death.

Spores fall to the soil surface to continue the infection cycle in subsequent years.

As there are no fungicide treatments specifically recommended for clover rot the selection of resistant varieties is recommended.

**Viral Diseases**

Of the 26 viruses known to affect grasses in Europe, ryegrass mosaic virus (RgMV) and barley yellow dwarf virus (BYDV) are the most important.

**Ryegrass mosaic virus** causes light green streaking of leaves which eventually turn brown and die.

It affects Italian ryegrasses far more seriously than perennials.

Infections primarily arise from previously-infected plants or via an air-borne mite in new sowings, colonies of several hundred of which can infest a new leaf.

Although the spread of the virus can be reduced by autumn rather than spring-sowing to delay the ingress of the mite, the selection of resistant varieties of Italian ryegrass is recommended.

Barley yellow dwarf virus affects many grass species, predominantly in south west England, attacking perennials in preference to Italian ryegrasses.

The virus is spread by several species of aphid.

Although the potential for losses in yield and persistence have been demonstrated, the extent of BYDV impact on grass production has yet to be established.

Resistant varieties offer the best promise of combating this disease, but have yet to be developed.

**White clover mosaic virus and clover yellow vein virus** are the most prevalent viral diseases of clover in the UK.

They can reduce yields but relatively little is known about their economic significance and no resistant varieties are yet available.