

Tyre care

This is an aspect that is often overlooked. It should be part of the general maintenance programme, as tyres need to be thoroughly inspected at least once a fortnight.

1. From the above it is clear that the correct inflation pressure is the number one priority and this needs to be done on a regular basis. The recommended psi can be found in the machine's instruction manual. If this is not available contact either the supplier or a specialist tyre company. Use a gauge to check - guessing the pressure will not solve the problem.

2. Valve caps should always be fitted. Dust or dirt can find its way under the seating and cause a leakage.

3. Always be on the look out for signs of damage to the tread and side walls. A bulge indicates that things are not right. If a stone or other foreign body has lodged in the tread it needs removing. Any deep cuts will also require attention.

4. Where equipment is laid up for a longish period the tyres will have to be rested. The whole unit should be raised on jacks or blocks to take the load off the wheels.

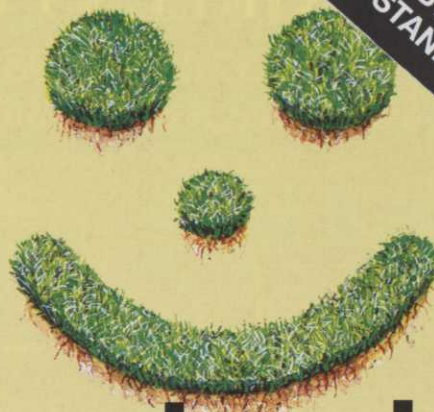
5. Correct storage is important. The tyres (or wheels with them fitted) should be kept in a dark place, away from petrol, oil and other chemicals. Electric motors give off ozone, which over a period of time will break down the rubber content of a tyre, so they should be stored well away from these.

If a puncture does occur there are tyre sealants and plug kits now available to carry out an on site repair. Having a stock of these readily available will save a lot of time. Your local specialist will be able to give details on these products and advise which are the best.

If equipment is going to be used on the public highway the tyres and any repairs must conform to the regulations.

After the engine the tyres are some of the most important components if a piece of equipment is to work satisfactorily. In the event of a flat due to neglect, wear or a puncture the machine is inoperable. A lot of time can be wasted getting it repaired or obtaining a new one, so it makes sense to look after them correctly and thus reduce unnecessary hassle in 2001.

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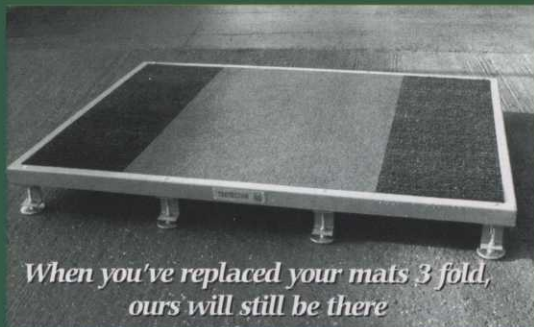
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Jenny Murphy helps identify the diseases you are likely to find in turf and explains how to maintain turf in good condition

Disease-free turf

Turf diseases are disorders which are usually caused by parasitic fungi invading plant tissues and robbing the grass of vital nutrients.

Alternatively, they can be caused by the indirect effects of fungi inhabiting the soil in the root zone and altering the availability of water and nutrients to the grass, as in the case of the fairy ring fungi. In either case they present a problem to the greenkeeper, who needs to take some form of remedial action in order to restore the turf to full health.

Intensively managed turf is often more prone to attacks of turf disease. In many cases, development of disease problems can be attributed to cultural causes, i.e. a failure to provide optimum conditions for plant growth. The long term remedy will usually involve changes in the cultural techniques employed, e.g. by increasing scarification. In the short term however, the use of fungicides may prove necessary to halt the disease and protect the grass from further damage.

This article aims to assist in the correct identification of turf disease and to detail the main factors encouraging their spread. Details of cultural measures and fungicides available for disease control are given.

General care of fine turf

In order to maintain turf in a healthy condition, particular attention needs to be given to the following areas.

Correct feeding

Left to its own devices, grass will survive on soils with widely ranging nutritional value. However, to provide the optimal growing conditions needed for fine turf, feeding needs to be carefully managed. The main nutrients which grasses need are nitrogen, phosphate and potassium. The precise requirements for nutrition depend on the grass species, time of year and the type of soil. Some diseases are encouraged by lack of soil fertility, e.g. Red Thread, while too much nitrogen in the soil can encourage other diseases such as Fusarium Patch.

Root systems

Poor drainage, compaction and the build up of thatch can cut down air supply to the grass roots, reducing plant vigour. This renders the turf more susceptible to disease attack. Turf soils need to be kept aerated by regular spiking or hollow tining, and the thatch controlled by routine scarification.

Shade

Plants need sufficient light to promote healthy growth. Where grass is shaded

by trees, hedges and other obstructions, vigour may be reduced and grass becomes prone to disease attack. Where possible, excessive shade should be controlled by pruning.

Soil pH

The optimum pH for grass growth is between pH 5.5 and 6.5, although grass can survive a much wider range than this. Outside this range, the pH will reduce plant vigour and in some cases, an alkaline pH (greater than 7) can encourage the disease Take-all Patch.

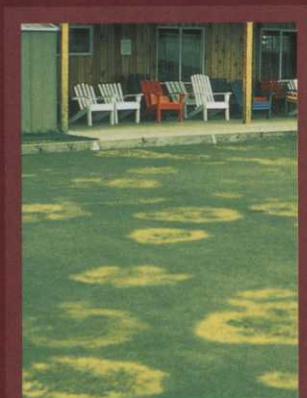
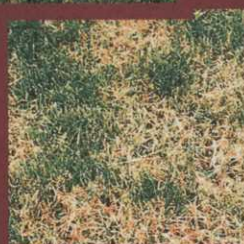
Disease resistance

Some cases of fungicide resistance have been observed, associated with fungicide treatments of food crops, where the same chemical has been applied repeatedly over a number of years. To date however, no cases of disease resistance have been identified in association with disease control in UK turf.

Rotation of fungicides will help prevent the problem of resistance occurring. A programmed approach, where a systemic fungicide is used during periods of strong growth, backed up by the use of a contact fungicide during the autumn and winter months, will maintain a balanced treatment.

The main diseases greenkeepers are likely to meet are outlined overleaf.

Disease-free turf



Fusarium Patch

Symptoms

Orange brown patches, 2.5 to 5cm across, increasing in size under suitable conditions. Can coalesce to affect large areas. Disease often very active following periods of snow cover, when it appears as an orange-brown ring surrounding a pale straw-coloured/slightly pink centre.

Occurrence

Any time of the year when conditions are suitable, but especially spring and autumn and after snow.

Grass species involved

Annual Meadow-grass (*Poa annua*) is the main species attacked but the fungus also attacks Bent Grass (*Agrostis* Spp) and occasionally other grasses. Host preference is diminished when disease attacks under snow cover.

Other influencing factors

Shade, humidity, alkaline surface, inefficient drainage, excess nitrogen.

Control measures

Identification of influencing factors and application of appropriate remedial measures.

Red Thread/Pink Patch

Symptoms

Ill defined patches of bleached grass. Pink mycelium often visible in morning dew cover. Red needles present, attached to leaf blades. Needles become brittle on drying and serve to spread disease into new areas. Rarely infected grasses killed out. The disease is now thought to be a 'complex' involving 2 species: *Laetisaria fuciformis*, where red needles are present – Red Thread, and *Limonomyces roseipellis*, where pink mycelium is present – Pink Patch

Occurrence

Very common. Occurs during summer and autumn and can persist into mild winters

Grass species involved

Can affect most lawn grasses, particularly Red Fescue (*Festuca rubra*) and Perennial Ryegrass (*Lolium perenne*).

Other influencing factors

Low fertility – particularly low nitrogen

Control measures

Improve fertility. Select resistant cultivars.

Anthracnose

Symptoms

Leaves of affected plants turn yellow. The youngest leaves often turn red. The plants rot at the base and can be pulled out with greater ease. A black staining at the base of the plant can be seen when the disease is at the advanced stage. This black structure, known as an acervulus, is involved in reproduction.

Occurrence

Can be fairly common on poorly managed turf in late summer and autumn

Grass species involved

Annual Meadow-grass is particularly susceptible, especially when the management of turf is tilted towards starving out this grass species.

Other influencing factors

Poor growing conditions, especially where compacted soil restricts the air supply to the roots. Poor fertility is also likely to encourage this disease.

Control measures

Measures taken to relieve compaction, eg hollow tining/soil tining, turf conditioning etc. Application of a balanced autumn fertiliser.

Take-all Patch

Symptoms

Rings or part rings of orange/brown grass from 0.1 to 1 metre in diameter. The band of drying grass is usually about 0.1 metre across and is predominately the result of a fungal attack on the roots which become grey and discoloured, thereby allowing the affected plants to be easily plucked from the turf. At certain times, a black reproductive structure, known as perithecia, may be seen low down on the stem. This is usually found immediately below the leaf junctions. The perithecia contains many banana shaped asci, each containing 8 long ascospores which serve to spread infection. Infected patches become devoid of bent-grass species and contain only non-susceptible grasses.

Occurrence

Most common in late summer and autumn.

Other influencing factors

Waterlogging and surface alkalinity increase the likelihood of this disease

Grass species involved

Bent grasses (*Agrostis*)

Control measures

Avoid over application of lime during the summer. Liming is best done in the autumn and, after a suitable interval, should be followed by a dressing of fertiliser to re-acidify the surface. Attention to drainage of wet areas is recommended

Jenny Murphy is the Technical and Registration Manager of Aventus Environmental Science

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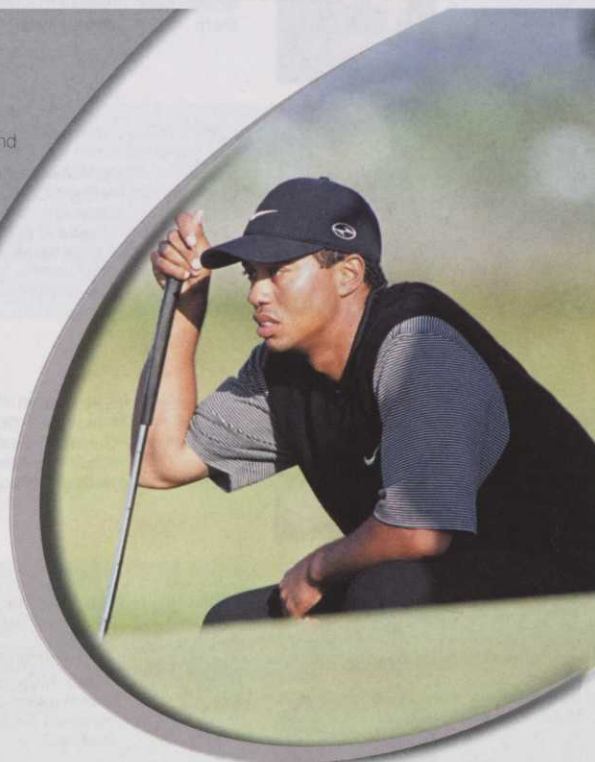


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TALKING

Six of the country's top men give their views on pests (Leatherjackets, chafers, worms, rabbits and moles) and how they combat them

Pests (Leatherjackets, chafers, worms, rabbits and moles)

Compiled by Malcolm Huntington MBE



Name: Iain MacLeod
Course: Tain GC, Rosshire
Region: Scotland
Course Type: Links
Staff: Head Greenkeeper plus four



Name: Pat Murphy
Course: Shipley GC
Region: Northern
Course Type: Parkland/heathland
Staff: Course Manager, plus six, plus two gardeners



Name: Neil Whitaker
Course: Arkley GC, Herts
Region: Midland
Course Type: Mixture of parkland and heathland
Staff: Course Manager, plus two (nine holes)



Name: Billy Mitchell
Course: Perranporth Golf Club, Newquay, Cornwall
Course Type: Duneland, links type
Region: South West and South Wales
Staff: Head greenkeeper plus three (365 acres)



Name: Billy McMillan
Course: Mannings Heath, Horsham, Sussex
Region: South East
Course type: Parkland (36 holes)
Staff: Course Manager, plus two Head Greenkeepers, eight greenkeepers plus mechanic (winter), plus three more staff (summer)



Name: Joe Findlay
Course: Royal Portrush Golf Club, Co Antrim
Region: Northern Ireland
Course type: Links
Staff: Head Greenkeeper plus 13, plus five part-timers in summer (36 holes, nine-hole pitch and putt course)

Which pests give you the most problem?

1

Leatherjackets and moles. It used to be rabbits, but we employ someone to shoot them now and whereas we used to get as many as 30-40 in one night now we only see the odd one.

Moles are the main problem, but I also get damage from rabbits, badgers and deer.

Rabbits, closely followed by moles. We also have worms and a few leatherjackets in addition to quite a few foxes.

Rabbits and moles are the biggest problems and we get more moles if we have worms about.

Worms are by far the most debilitating problem on our courses and I see them as a major concern for many people in years to come if, as seems possible, winters get wetter. We don't get a lot of leatherjackets here.

Leatherjackets are the only real problem. There are no sign of worms because of our sandy soil.

HEADS

How do you identify them early?

We see the cranefly on the wing and also laying on fairways and greens and the presence of various birds, including the hooded crow soon let us know they are about.

Molehills give you a clear indication straight away, and there are scrapes and droppings from rabbits, badgers dig up the grass and deer eat parts of trees.

Rabbits are easily identified because of scrapes and droppings. Birds pecking are a sign of leatherjackets and sometimes worms when the birds turn divots over.

Rabbits are no problem to identify as there are scrapes and holes dug round bunkers. Molehills clearly indicate their presence.

Worm casting in early autumn and winter.

If you wait to see signs of damage it is too late. Crane-flies lay eggs in August and September. In late October or early November I spray with Chlorpyrifos insecticide to kill the grubs and also do a lot of aerating and also use a hydrojet

How do they affect play?

Not really at all. We try to nip things in the bud when possible. We didn't aerate in August, September and October this year so that there wouldn't be ready-made holes for craneflies to lay eggs. Instead we tine and verticut in November.

They don't affect play at all because damage is not done to the fine turf. Moles are usually in semi-rough and rough on our course.

Holes in bunkers are the usual problem concerning rabbits and divots lifted by birds, in addition to not being replaced by golfers, are a nuisance. But I would say that play isn't affected to any great extent.

Bunkers have to be raked regularly because of rabbits digging. We had nests built into the bunkers last year. But generally speaking they don't affect play that much.

The casting of worms can destroy any fine sward and detracts from the quality of the playing surface for members and visitors as you can quickly get a lot of mud. Some players tee up on worm casts!

Not at all. I maintain a very tight sward which is an excellent defence against the crane-fly. I never let it get to the stage of affecting play.

What measures can you take to prevent them?

We spray for leatherjackets in November and, if there is a major infestation, in March as well. Because we are on sandy soil we get few problems with worms but greens are sprayed to deal with what few we have.

Moles need water every four hours, so I suppose you could say cut off the supply! In dry weather they go down and you never see them and they come up looking for worms when it's wet.

Spraying with pesticides, repellants and retardants. We have someone coming in once a fortnight to shoot rabbits. Many years ago I used lead arsenic and later chlordane to control worms but there is nothing as effective as these nowadays. The present suppressants are costly and give minimal control. On a previous course we electrified fences to deter badgers.

I use Scuttle, a good animal repellant and I also have mole traps in addition to putting down Phostoxin. We have a resident badger which does a bit of digging but we tolerate him.

Short of keeping the playing surface dry and free from any leaf and grass litter, there is nothing more I can do. I could go on about low fertility, light and air, but that is a long story.

The most important thing is to have a good deep-rooted system and tight sward to withstand pests. We haven't used fungicides for the last three years, only pesticides.

What measures do you take to tackle them if they have hit?

We spray if leatherjackets have struck and if the signs are severe, with damage to the root system, we overseed or re turf. Worm casts are an ideal seed bed for weeds. Cutting fairways can be more difficult if there are worm casts about.

We trap moles, net rabbits but don't touch badgers, which are protected, or deer. I am a nature lover so I don't like to see shooting on the course. I am a bit worried that we may struggle to find something to deal with worms one of these days. There hasn't been anything as good as chlordane, which is now banned of course.

Rabbits are a major problem and it is a losing battle with them. We use conventional methods such as shooting and gassing.

We try to eradicate pests by conventional methods, shooting rabbits and gassing the burrows. But we will never beat them.

We restrict worm casts by chemical control as late in the season as possible in an effort to avoid multiple applications of chemicals on our courses. But always remember the old saying 'as custodians of the land we have to co-exist with nature.'

I spray with the appropriate pesticide if there is a sign of bird activity. Rabbits are a minor problem. We had a foot square of fairway damaged by a rabbit, but his time will come! And you may be interested to know there are no moles in Ireland.

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Walter Woods reveals the trials and tribulations which went into producing the acclaimed new Kingsbarns course just outside St Andrews

Making of a masterpiece



Kingsbarns Golf Links is just six miles south of St Andrews on the east coast of Scotland. The village itself is picturesque containing a small church with a large steeple which dominates the skyline.

Being close to St Andrews it is not surprising that golf was a favourite pastime among the locals and this dictated that there should be a golf course of their own to allow them to improve their skills. To achieve this a compact but delightful nine hole golf course was created and founded in 1793 on a flat piece of land adjacent to the sea and protected by a large

grassy sea bank. This allowed golf to be played and enjoyed for many years but to their disappointment it would be closed down to allow war exercises to be practised.

The remaining Kingsbarns golfers then joined other local golf clubs but still to this day play annually for the original trophies at nearby Crail Golf Club. Since 1939 the golfing ground had been allowed to grow for cattle grazing purposes.

The new Kingsbarns was resurrected when a local businessman spotted its golfing potential. He contacted two American investors who soon realised

that an outstanding traditional Links embraced with coastal sea views could be constructed which would eventually reflect the heritage of Scottish traditional golf.

Following initial introductions, the first few months were occupied by meetings and planning. Kyle Philips who originally worked with Robert Trent Jones Jr was contacted then selected as the Architect to work in co-ordination with Mark Parsinen. Kyle Philips designed the routing from one to 18 with Mark following up by designing the mounding, slopes and hollows which are the features which

Making of a masterpiece

add character to rugged sea-side Links.

The design of the new course was split into two levels, the upper and lower, with the objective of having as many playing areas as close to the sea as possible. The upper level because of its more agricultural type soil required to have the heavy texture balanced by exchanging and mixing a plentiful supply of sand taken from the lower level. This was time consuming but would be beneficial in the long term.

When I was contacted by Mark Parsinen it was mainly to give advice and also to contribute my Links experience gained by working at St Andrews for over 20 years. I was also given the authority of promoting many projects which are required in the forming of a golf course.

Large bulldozer earth moving equipment operated with skilful trained shapers can grade any mound or contour specified to the plan or drawing. This can be applied to any golf course whether it be Links or inland - with the added benefit that sand can be easier to move than clay. Kingsbarns because of its location would be designed and created to have rugged natural appearance which has been sculptured by mother nature.

Following the first day of earth moving it was discovered to our concern that a thick band of clay which existed some four feet below the surface, was being disturbed and spread, contaminating all of the surrounding surfaces. Owing to this all work was stopped to allow

plans of contours and levels to be modified.

This discovery at first was alarming but did instigate discussions which indicated that a comprehensive drainage system be designed by a drainage expert then installed as work progressed. This decision paid immediate dividends as we were about to experience the wettest winter then following summer since weather records were initiated.

As the development progressed much slower than anticipated owing to excessive rain, it did provide the opportunity to plan and organise important side issues such as mains electricity large enough to supply maintenance and Clubhouse demands. Fresh water was piped from the village with irrigation water taken from underground aquifers by two 90 metre deep bore holes.

Maintenance buildings were sourced and investigated with the view that this building would be the nerve centre of the project, large enough to contain all necessary machines to serve a high standard well-maintained golf course.

Over the next few months frequent rain showers inflicted many delays which were frustrating. Every day, or each dry spell, had to be taken advantage of. Motivation and organisation were the key words required to drive forward every inch of progress.

Once a fairway green or tee was completed they were assessed by the Architects then passed onto the contractors for cultivation, preparing, then seeding. Large areas were seeded by machine drilling lines of seed at varying angles. The mounds or slopes were hydroseeded which is a machine containing a large tank which water seed and a paste-like substance is mixed then high pressure powered sprayed onto the surface at equal thickness allowing the seed to stick and germinate much quicker.

Owing to the traditional aspect fine blends of grasses were selected capable of blending to form a uniform sward. These were mainly consisting of fescue and bent grass which provide the seaside appearance but are also capable of withstanding the vagaries of our ever changing weather.

Seed selected for fairways would be 20% slender creeping red fescue, 30% chewings fescue, 30% strong creeping red fescue, 10% Browntop Bent with 10% Poa Pratensis for quick healing purpose.

For greens the seed selected would be 30% slender creeping red fescue, 40% chewings with 30% Browntop Brent grass



Tees were almost similar to greens but had a percentage of Poa-Pratensis added with a slight reduction to the creeping red and chewings.

Roughs on a Links, particularly the periphery mounds and dunes, is where the whole visual aspect can be highlighted like a beautiful lady all dressed up. We chose sheep's fescue as the main variety mainly because of its upright slender graceful stance which changes to a delightful pinkish hue towards the late summer.

During 1998 seeding continued to all areas. While achieving this two out-of-play locations were selected for heather planting by plugging small potted heathers into the ground but before doing so the selected ground was made acid by spreading aluminium sulphate. Gorse bushes which are common to links were also planted at chosen points mainly to provide strategic playing issues. Broom which has a similar appearance to gorse but is not so hardy, was attempted by adding the broom seed into the hydroseeder tank when seeding the outer perimeter mounds. This became surprisingly successful.

1998 progressed slowly often with unexpected difficulties experienced mainly by heavy rainfalls creating flooding then gathering force washing out many of the newly cultivated slopes finishing up with depositing large heaps of soil and seed. Patience