

# Just the Tonic

Nick Harden looks at the causes of poor health in fine turf and some of the treatments and corrective measures greenkeepers can apply.

Like those who play on it, golf course turf can sometimes get run down and in need of a tonic, particularly following the depressing cold and wet months of winter. This is when greenkeepers have to take on the role of turf doctors, looking at all the possible causes of the turf's depression and establishing the best forms of treatment. Turf's requirement for a tonic may be diagnosed as needing a change of 'diet' or 'environment', or the application of a 'medicine'.



Fusarium patch

## DIET AND ENVIRONMENT

In order to maintain turf in a healthy condition, and therefore reduce the need for treatment, particular attention needs to be given to four particular areas, one relating to 'diet' and three to the turf's 'environment'.

### 1. 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 that 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. Again like its players, turf's diet may need a helping hand in the form of supplements, in this case fertilisers.

When using granular fertilisers on golf course turf, a compound, although more expensive, offers distinct benefits over blended forms which often contain large proportions of grit. Grit has no nutritive value and can damage expensive mowing machinery. Additionally blends can create lush week growth and can increase the risk of scorching.

Compound fertilisers are made up of individual prills containing the vital components Nitrogen, Phosphate and Potassium. This allows a far more even supply of nutrients to create uniform strong growth of turf type grasses. Compounds also incorporate sulphur, a component lacking in blends as well as in the atmosphere, but which is a trace element essential for healthy grass development.

### 2. 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.

### 3. Root systems

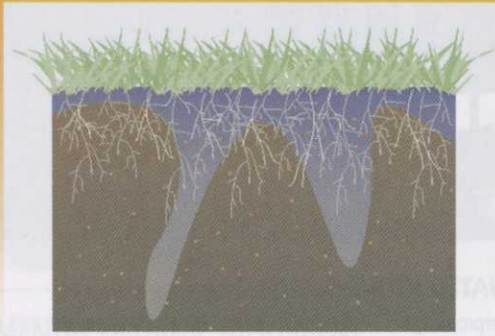
Poor drainage, compaction and the build up of thatch can cut down air supply to the grass roots, reducing plant vigour. This renders the turf more susceptible to disease attack. Turf soils need to be kept aerated by regular spiking or hollow tining, and the thatch controlled by routine scarification. Optimum moisture access in the rootzone, air to water ratios, and the ability to produce chlorophyll, thereby encouraging more efficient photosynthesis and better production of carbohydrate energy reserves, all contribute to keeping the turf healthy.



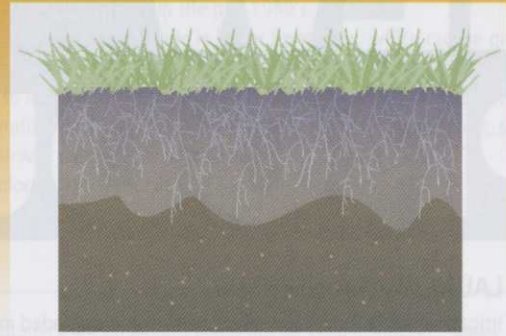
Leatherjacket



## WATER FLOW BEFORE



## WATER FLOW AFTER



### 4. 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.

### 5. Water

As in humans, water is arguably the most essential part of the equation when it comes to turf survival. Your turf can survive longer without proper nutrition and optimum environmental conditions than it can without access to water.

The physical structure of the turf plant is comprised of 75 - 85% water, and adequate levels are needed to be maintained for basic metabolic functions, tissue formation, cooling, and food manufacturing to continue. It also acts as the transport system through which the turf takes up nutrients and 'medicines' through its roots and carries it through the plant.

Turf loses the greatest amount of water under stressful conditions such as high light intensity, high temperature, low atmospheric water vapor content, and windy conditions. To make sure that your turf is getting the water it needs to survive, especially during these stress periods, it is recommended that a quality soil surfactant be used.

Surfactants have been proven to reduce fingered flow and other water related problems, such as dry patch, wet spots, and uneven wetting. They help to establish and maintain a 'matrix flow' - a consistent downward and lateral water movement pattern that ensures uniform movement of water and turf chemicals through the soil profile. This promotes healthy turfgrass since water and water soluble chemicals penetrate deeper into the rootzone, encouraging a deeper root structure for healthier, denser and more uniform turf surfaces.

With surfactants you can use less water overall and still maintain the levels needed in the soil, since little is lost to run-off, channelling or surface evaporation.

### THE 'MEDICINES'

If it is not in peak condition, turf becomes more susceptible to pests and diseases. For the treatment of diseases, pests and weeds in golf turf most greenkeepers will agree that, like it or not, the 'tonic' will often involve some form of chemical control.

### TREATMENT OF PESTS

There are four main pests that are the bane of the greenkeeper's life: worms, although beneficial in helping to aerate the subsoil, their casts cause problems particularly on greens; leatherjackets, the larval stage of the crane fly; the frit fly, particularly for newly-sown turf, and the infamous chafer grub. A new product for the control of chafer grubs is due to be launched in the UK during April.

Application of pesticides will usually be in the form of spraying affected areas, at rates and frequencies recommended by the manufacturers. Some products have tank-mix compatibility for treating two or more pests at the same time, reducing both labour involvement and chemical usage.



Chafer Grub

### TREATMENT OF DISEASES

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. Turf diseases are disorders that 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 rootzone 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.

*Thanks to Bayer Environmental Science, British Seed Houses and Supaturf Products for help in compiling this article.*