Geoff Yelland takes an in depth look at one of greenkeeping's potential nightmares: The Leatherjacket

MONSTERS FROM THE DEEP

Under the surface of fine turf at this time of year lurks a voracious feeding machine with an appetite to match Jaws – and right now it could be attacking the roots of your turf!

Leatherjacket activity is one of the biggest threats to fine turfgrass through the winter and early spring period, and while damage visible on the surface is often attributed to other factors such as drought and stress, leatherjackets – underground and out of sight – are the real enemy.

The problem is that although leatherjackets are feeding now, the signs of damage will not be obvious until the spring..

The first visible signs of activity are straw-coloured patches of turf which happen when roots are damaged by leatherjackets feeding on the roots. Soon after this the patches become bare and are invaded by weeds.

Leatherjackets are rather like great white sharks – superbly designed eating machines!

Magnified photos give a pretty good clue to the reason for their voracious feeding habits – their extremely large biting mouthparts mean they can easily chew and sever roots and stem bases. That's why what looks like stressed or drought-hit turf on the surface can often be hiding a more serious problem.

The key to effective treatment is a sound understanding of the crane fly's life cycle.

A closer look at this will help turf managers match insecticide application timing to the more susceptible immature larval stage of the pest.

Leatherjackets are the larvae of the crane fly (Tipula paludosa), or daddy longlegs, and undergo complete metamorphosis through four distinct phases: adult (crane fly), egg, larvae (leatherjacket) and pupae. Each adult crane fly lays 300-400 eggs just below the surface of the soil between late July and early September.

The leatherjackets emerge two to three weeks later and begin feeding on grass roots, which continues until the following June when they pupate.

The adults then begin to emerge again from late July to complete the life cycle. The problem at this time of year is that leatherjackets consume large amounts of plant material and quickly build up their food reserves during the autumn and early spring.

Infestation and damage in the spring can be particularly severe if the autumn and winter are mild and moist as they can continue feeding throughout this period. And of course, turfgrass growth has slowed at this time of year, so it cannot compensate for the damage caused.

A well-planned integrated pest management approach can be extremely effective at keeping leatherjacket numbers down – but timing of every process is crucial for good results.

Cultural operations, particularly spiking or slitting to improve turf aeration and reduce excess surface moisture, are the key to creating an adverse environment for the pest. Leatherjackets thrive in a warm, moist environment, but cannot tolerate dry conditions, and a freely draining, aerated sward in the autumn will help ensure that populations surviving through to the spring feeding period are minimised. Of course, the benefits of good aeration are twofold, as it also helps prevent fusarium development.

A combination of these operations and the use of a proven insecticide will give effective control if timing is carefully planned. Aeration reduces the moist turf conditions in which leatherjackets thrive, while the contact, ingestion and vapour action of the insecticide gives a high level of control.

With lower temperatures during the early winter period, leatherjackets tend to move further down the soil profile to avoid the cold turf surface, and will only actively feed when temperatures are greater than 60C.

For this reason, it's not advisable to apply pesticide during periods of prolonged frosty weather as the leatherjackets will be too deep within the soil to come into contact with the insecticide.

This is why treatments should ideally take place in the autumn or early spring. Attacks in the spring are often more serious, as the leatherjackets are approaching maturity and are more active, inflicting severe injuries to root systems and stem bases, so it's advisable to treat for leatherjacket infestations sooner rather than later.

Careful monitoring of leatherjacket populations and environmental conditions at this time of year is an important part of integrated pest control.

Keeping a record of signs of activity such as the number of crane fly seen on the wing during the late July to early September period and the feeding activity of birds on turf can be good pointers to the likely leatherjacket populations for the year. And that will give greenkeepers a head start over the eating machines.

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Risk assessment chart for leatherjackets in turf

Risk Category	Rating
Locality	
Predominantly grassland	***
Mixed arable/grass	**
Mainly arable	*
Other	*
Past history	
Problems noted previously	***
Problems in neighbouring farmer's fields/areas	***
No history of problems	*
Weather during late summer/autumn	
Warm/damp	***
Cold/damp	**
Warm/dry	*
Cold/dry	*

Action

Over 7 * Apply pesticide

5-7 *Check for signs of damage or presence of larvae. An indication of leatherjackets may be given by the presence of birds, particularly rooks, crows and starlings searching for grubs. Apply pesticide as necessary.

Under 5 * Treatment may not be needed.

Know your leatherjacket risk – complete this risk assessment and add up the score to determine the threat to your turf.