

# *Turf Solutions*

## A Practical Perspective On The Benefits of Worm Free Soil

To the Professional Turf Manager whether a Greenkeeper or Groundsman, the requirement for a 'clean' worm free turf surface is an absolutely imperative requirement for a number of reasons which I will discuss within contents of this article.

Firstly not all earthworms are problematical in turf there are approximately 25 species of earthworm in the UK but of these only 2 create surface casting problems the 2 'offending' species being *Apporectodea longa* and *Lumbricus terrestris* the remaining species are non casting varieties causing very little if any problems.

Before discussing the control of these 'casting species it is Important to outline the benefits to the soil the majority of earthworm species can have these are:

1. Earthworms help in the breakdown of organic matter in the soil whether in the form of litter on the surface or more deeper rooted thatch often present in most 'mature' turf areas.
2. Compaction is reduced and soil aeration increased by the burrowing action of the earthworm and soil structure improved by the 'mixing' of soils as they pass through the gut of the earthworm during normal activity.
3. However in most scenarios soils can be also aerated by the non casting species but overall this operation is negated by the casting action of the 2 named species previously mentioned.

However the 'down' side of most earthworm activity in turf is the prodigious production during moist muggy weather conditions of casts composed of soil which has passed through the digestive system of the worm and deposited in the form of a 'cast' on the surface.

Whilst in for example Horticulture all types of earthworm activity is generally encouraged in areas such as flower & shrub beds, vegetable allotments etc the effect of casting to all areas of turf is mainly detrimental by creating a considerable number of problems for the turf manager to solve these are:

Worm casts can seriously spoil the aesthetic look of turf but much more seriously 'disrupt' the playing surface producing an uneven even dangerous surface for some sports e.g Cricket, on golf and bowling greens the truness of putting surface can be dramatically spoilt in a very short space of time, by constant casting eruptions being produced on or near to the surface, producing 'perfect sites' for weed seeds to alight on. On driving ranges ball collection can be seriously hampered by the muddy conditions created by earthworm casting. Mowing operations also can quickly become a nightmare with mower blades rapidly losing their 'edge' when for example cutting through wind dried casts quickly becoming blunt, rollers clog up with 'sticky glutinous mud,' rendering accurate mowing heights virtually impossible considerably extending the down time of normal routine maintenance operations. Also 'squashed' worm casts either by machinery of foot smother grass plants further adding to the general deterioration of the playing surface.



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Worm casts also increase quite significantly the populations of most weeds particularly broad leaved varieties such as daisies, plantains and Dandelions etc, weed populations normally increase in the presence of worm activity by bringing to the surface dormant weed seeds which are always present buried in the soil profile, the worm cast produced is in fact an ideal highly fertile growing medium for all weed seeds to germinate on creating further problems for the greenkeeper /groundsman in the future.

Generally worm activity is mainly confined to moist conditions which can occur nowadays throughout the year I feel that worm casting problems occur during most months of the year.

## Earthworm Control

Earthworm control comes under 2 categories Cultural and Chemical

**Cultural controls** are for example to reduce the soil pH by using acidic fertilizers based on ammonium sulphate and perhaps by using sparingly products containing Ferrous sulphate which are also acidic in nature, avoid the use of Organic products such as organic fertilizer products which only 'increase the humus levels in the soil favouring earthworm activity. Regular scarifying and removal of arisings from the sward which further reduces the 'organic food 'source also helps in cultural control

Avoid the use of non acidifying fertilizers such as Potassium Nitrate, reduce the production of clippings being returned to the soil by regular applications of the new generation of Plant Growth regulator Primo Maxx during the growing season clipping yield reduction has found to be reduced by as much as 50% according to end users in testimonials given to Scotts. Regular mowing can also have an indirect effect on earthworm activity as earthworm's generally appear to favour longer swards.

## Chemical Control

Chemical control is becoming increasingly more difficult for the Turf manager with the withdrawal of a number of chemical products over the past decade or so the only active ingredients available for control at present are Thiophanate Methyl and Carbendazim (Scotts Turfclear). However these are also subject to EU review in their usage on turf.

Chemical control should be carried out when worm activity is apparent i.e. when casting is present normally during moist muggy weather conditions normally in the spring and autumn but can occur at any time of year. If the timing of the chemical operation is correct excellent control can be effected although these control periods can be short lived in some cases a little as 6 weeks but up to 12 weeks is the norm, however the factors such as earthworm population, soil organic matter levels, soil pH, soil type climatic and soil temperatures etc can all have a bearing in overall chemical earthworm control.

To summarise earthworm control is generally required for all sports turf surfaces, but effective control can only be achieved through a combination of management techniques firstly cultural and secondly chemical.



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