

Etiolated Growth in Turfgrass

(ETS—Etiolated Tiller Syndrome)

What causes Etiolation?



Examples of etiolated *Poa* vs. a normal plant on the right.

Etiolation in plants occurs when they are grown in either partial or a complete absence of light. The condition is characterised by long, weak stems with smaller, sparser leaves due to longer internodes, with a pale yellow or bleached white, chlorotic colour—signifying a lack of chlorophyll.

Whether 'etiolated growth' is quite the right term to describe this phenomenon of elevated, bleached plants of mainly *Poa annua* noted on golf greens, collars, approaches and fairways at certain times of year is open to debate, but the characteristics of the plant are very similar to the above description. Etiolated growth (pronounced Eti-olay-ted) or as it's known in the U.S. – Etiolated Tiller Syndrome (ETS) usually occurs after a period of dry weather followed by thunderstorms and/or rain/high humidity, for instance at the end of a dry spell in the summer. Etiolated growth can also show during the spring and summer, if autumnal weather patterns occur, as was the case in 2007 and 2008.

Explanation

Certain biotypes of *Poa annua* spread across a golf green, effectively 'bolt', in much the same way as a plant grows in low light and the result is elevated growth above the canopy which is bleached and lacking in chlorophyll. It tends to occur across greens according to the distribution of the specific *Poa* biotype, but also shows itself more markedly on collars, approaches and fairways. When the writer first noticed etiolated growth it was thought that an application of Trinexapac-ethyl may be an effective control, as it inhibits gibberellic acid (GA) production. However Primo Maxx only affects the synthesis of one class of gibberellic acids known as GA1 (there are many other types), so experience suggests it does not solve the issue. The author of the article at http://www.agry.purdue.edu/turf/tips/2007/07_31ETS.htm on etiolated growth has come to a similar conclusion.



Kate Entwistle of the Turfgrass Disease Centre suggests that etiolated growth is a growth response to the presence of a hormone produced by *Fusarium* sp. fungi and if correct, it's likely this hormone is a type of gibberellic acid. This theory is supported in the article produced by Mike Fidanza, Jeff Gregos and Dan Brickley <http://www.golfdom.com/turfgrass-trends/ryegrass-are-etiolated-tillers-a-visual-nuisance-or-somethi>

Whether the hormone is produced by the plant reacting to the presence of a pathogen or by a pathogen itself, is secondary in importance in how to control the problem. The paper mentions trials conducted on etiolated growth using a range of PGR and fungicide products and promising results were obtained using a DMI-based fungicide. (Demethylation Inhibitor)

In autumn 2009, after a very dry September, there was a great deal of etiolated growth visible on golf courses and this coincided with the first application of preventative fungicides for *Fusarium* control. The writer visited many Course Managers who commented that the amount of etiolated growth decreased markedly when DMI/Triazole containing preventative fungicides were being used.

Whilst there are no products labelled for use against etiolated growth, it is encouraging to note that suppression may be obtained after application of a DMI fungicide for a labelled turf disease, like *Fusarium*. DMI fungicides available in the UK market (and some in Ireland) include Throttle, Banner Maxx and Masalon.



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