

**Positive effect of TourTurf® Defend applications in preparation for plant stress in autumn and winter periods shown in new trial.**

**By Carsten Marker, E. Marker A/S, September 2014.**

A trial commissioned by E. Marker A/S in autumn winter 2013/2014 to evaluate the efficacy of TourTurf Defend for the control of Fusarium patch and other fungal diseases in managed amenity turf has demonstrated potential of the product for preventing disease and stress in turf grasses.

A 4-application programme of TourTurf Defend at 10 L/ha in 700 L/ha water volume was conducted, with the first application in November 2013, followed by a further 3 applications at monthly intervals, through to February 2014. TourTurf Defend was also tested with two applications at 30 L/ha starting in November 2013 with a month interval. Throughout the trial period no differences were apparent between the 4-application and the 2-application programmes of TourTurf Defend. The trial design was a randomised complete block with 4 replications. Plot sizes were 2 X 2M. The disease pressure from Fusarium patch was relatively low in the period(Martin 2014).

TourTurf Defend was tested on a mixed sward comprising of annual meadowgrass, perennial ryegrass and creeping bent. The soil was a sandy loam soil.

TourTurf Defend is a liquid mixture of natural ingredients and has in our second trial in the autumn winter period 2013-2014 been proven to have a positive effect on the turfplants ability to survive periods of stress.

The product does not contain chemicals of any kind. Its contents consist of extracts from well-known plants and other ingredients, and it contains garlic extract, cayenne pepper extract and organic nettle extract, supplemented with vinegar, sugars (dextrose), lime water and silicon.

The combination of plant extracts from plants in a patented manufacturing process makes TourTurf Defend an exciting supplement to turf care on golf courses, football pitches and other amenity turf areas.

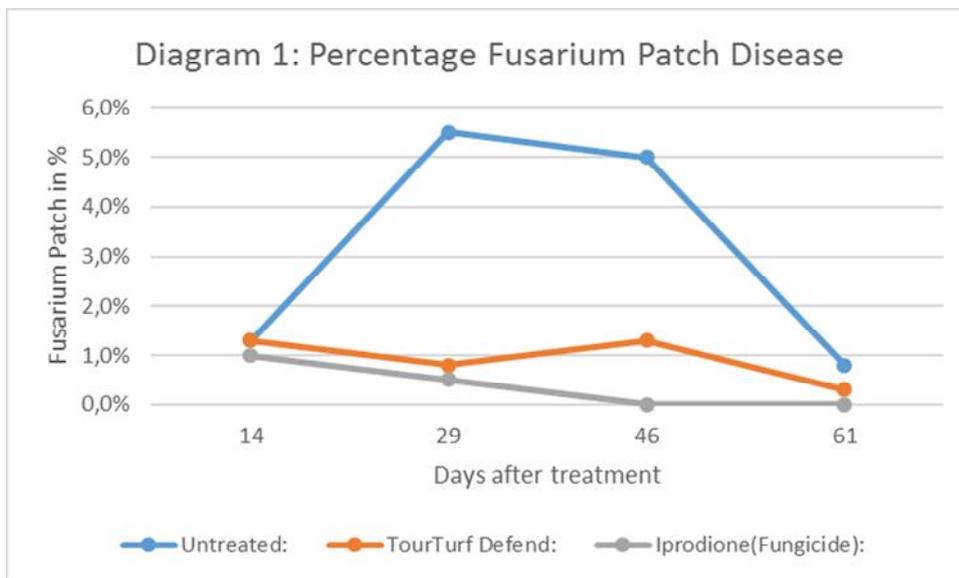
The product strengthens the vitality of grass and makes it strong and resistant to diseases, pests and plant stress throughout the growing season. This could again be seen in spring 2014 in our trials running for the second consecutive year on a golfcourse in Essex, England during the winter 2013/2014. The trial was conducted by AgroChemex in the UK for E. Marker A/S.

The trial showed the following results:

**Table 1: Percentage Fusarium patch disease**

Days after treatment:	14	29	46	61
Untreated:	1.3 %	5.5 %	5.0 %	0.8 %
TourTurf Defend:	1.3 %	0.8 %	1.3 %	0.3 %
Iprodione(fungicide):	1 %	0.5 %	0 %	0 %

**Diagram 1: Percentage Fusarium patch disease**



The results shown in the above table show that TourTurf Defend is able to condition the plant for stress in disease periods and that the biostimulant material help the turfgrass to be able to cope with disease pressure much better than untreated.

If you take a look at the results 29 days after treatment in the above table you will see the untreated control plots had 5.5 % of Fusarium patch. The plots treated with TourTurf Defend had only 0.8 % of Fusarium patch 29 days after treatment. The plots treated with iprodione (fungicide) had 0.5 % of Fusarium patch.

Plants have an astounding capability to defend themselves if they have everything they need in terms of micronutrients and other nutrition elements. This is why it would seem that Defend has a positive effect on plant health.

After testing mixability yourself you should be able to tank mix TourTurf Defend with a wide range of liquid fertilizers and biostimulants should you desire to do so. We advise always to test a small area first to judge upon the reaction of the grassplants. To avoid stress on the plants bring out TourTurf Defend on its own.

**Application rate:** Apply 10 L/ha in 700 L of water every 2-4 weeks during the growing season. Or use the product in periods with potential for stress development in autumn/winter periods as indicated in the above study. Alternatively use the product at the rate with 30 L/ha in 700 L of water with two applications. Both application rates will provide positive benefits to the plant. The 30 L/ha rate may cause stress on weak plants. Therefore it is advised to apply the lowest rate more frequently instead. We wish to confirm that we in our trials did not see any phytotoxicity at either rate.

For more information contact your sales consultant or distributor. Further trial work to evaluate TourTurf Defend as part of a preventative strategy will be carried out in the autumn/winter period 2014/2015 in both Hamburg, Germany and Portland, Oregon by recognized institutions.

Reference:  
Martin 2014, AgroChemex, Uk. Unpublished Trial data 2014.