TourTurf Dew Control efficacy for Reducing Surface Moisture (Dew)

a Report Submitted to E. Marker A/S
by
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August 25, 2015

Objective: To determine the effects of TourTurf Dew Control on the reduction of surface moisture (dew) for golf course putting greens in the Northern European climate.

Methods:

Experimental area. The proposed study was conducted on a sand-based putting green at Golf Club Hittfeld E.V. in Hamburg, Germany. The experimental putting green was maintained using practices typical for the region. The study ran from September through December 2014. Irrigation was applied as needed to avoid severe drought symptoms.

Treatments. The experimental area was sectioned into 1 by 1 m plots for TourTurf Dew Control treatment application (Table 1). Each treatment was applied to six replicate plots. Treatments were applied every 14 days from September through December in 2014. TourTurf Dew Control was applied using a CO_2 powered boom in a spray volume of 400 L / ha at 10 L TourTurf Dew Control / ha.

Table 1. Wetting agent treatments.

Treatment		Description
1.	Control	Untreated control
2.	TourTurf Dew Control	10 L / ha

Evaluations. TourTurf Dew Control treatment effects were evaluated according to Table 2.

Table 2. Wetting agent trial evaluations.

Evaluation	Description
Digital Image Analysis	Digital image analysis (DIA) for percent green color and dark green color index were collected one day prior to each treatment application and 13 days after the last application.
Whole Plot Images	Pictures of the entire research area were taken in the morning each day to track overall dew comparisons between TourTurf Dew Control and untreated plots.
Sponge Board Test	At 1, 5, and 10 days after treatment application, a sponge board test was done to determine surface moisture (dew concentration) differences. A dry sponge was placed in the center of each plot for 15 seconds to absorb surface moisture. The moisture was then squeezed out of the sponge and poured into a graduated cylinder to determine moisture volume.
General Data Collection	Plots were observed regularly throughout the study to identify any potential data collection (algae, moss, disease incidence, etc.) differences between treatments.

***Statistical analysis*.** TourTurf Dew Control treatments were replicated six times in a randomized complete block design. For each evaluation, a one-way analysis of variance was computed to determine if the effect of TourTurf Dew Control is significant ($P < 0.05$). The data was analyzed as a repeated measures experiment, using PROC MIXED of SAS v. 9.1. Date effects were sliced to determine specific dates when significant treatment effects were present.

***Results*.** TourTurf Dew Control treatments significantly reduced dew formation on the putting green for all dates where significant dew formed on the untreated control plots (Figure 1.). Data from this study suggests that TourTurf Dew Control applications provide exceptionally low incidences of dew formation. Reducing dew formation on golf course putting greens helps provide more favorable environmental conditions to reduce disease pressure.

No significant differences occurred for percent green turf cover, dark green color index, or for moss, algae, and/or disease incidences.

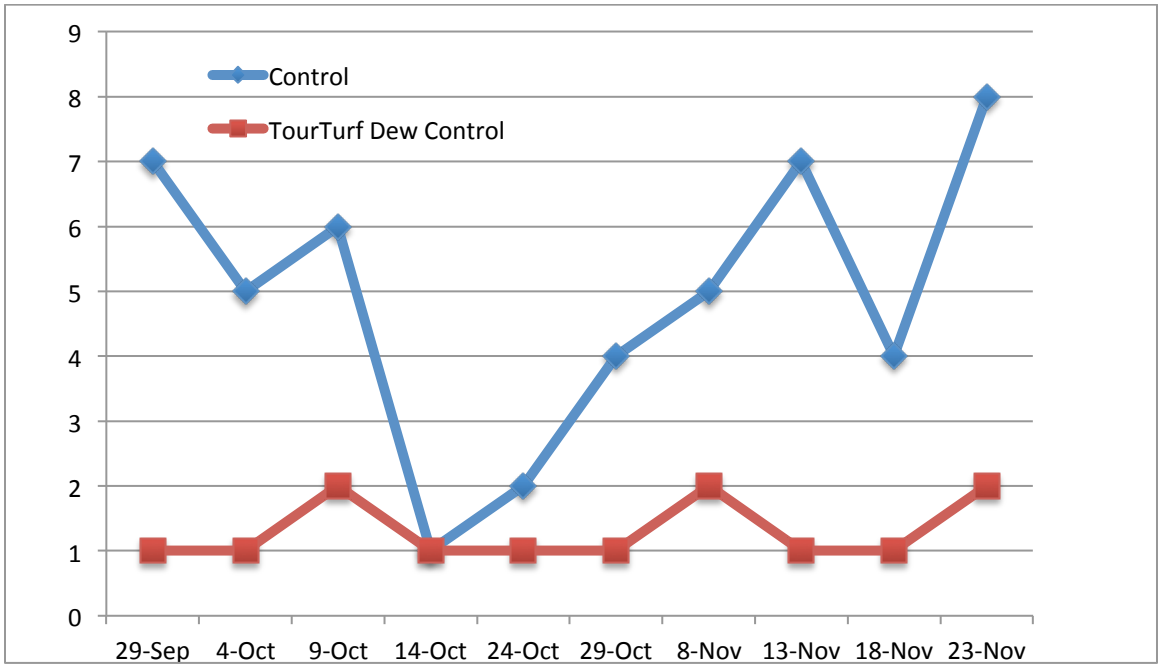

Figure 1. Sponge Board Test dew collection (ml) from TourTurf Dew Control Study at Hamburger Land and Golf Club, Hittfeld, Germany – 2014.

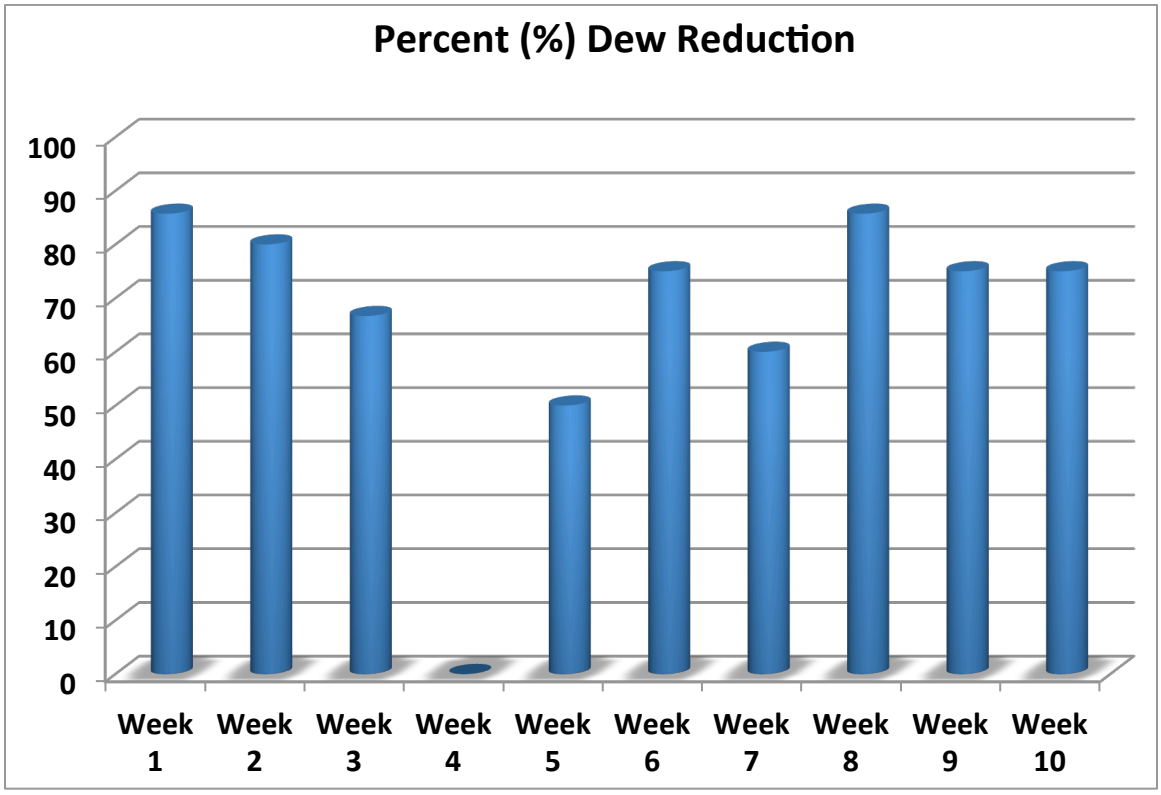

Figure 2. Percent (%) dew reduction from TourTurf Dew Control Study at Hamburger Land and Golf Club, Hittfeld, Germany, 29 Sep – 23 Nov 2014.

Conclusions TourTurf Dew Control is an effective dew control product that provides improved putting green surface conditions reducing dew incidences that occur.

Figure 2. Treatment differences for TourTurf Dew Control Study at Hamburger Land & Golf Club, Hittfeld, Germany – 2014.