

TURF TRIAL INFORMATION

H₂Pro[®]
TriSmart

Tank-mixing Vitalnova SMX with an H₂Pro TriSmart programme provides a significant improvement in turf quality and rootzone microbial biomass on golf green turf

SUMMARY

- A replicated, randomised block design trial was carried out on a *Festuca spp.*-dominant turf nursery with a sandy rootzone located at St Andrews Links in 2022
- The trial aimed to demonstrate the benefits of an H₂Pro TriSmart wetting agent programme at alleviating turf moisture stress
- In addition, the trial also examined if tank-mixing Vitalnova SMX with H₂Pro TriSmart enhanced turf response over both untreated and H₂Pro TriSmart only
- An analysis of the application programmes on microbial biomass in the rootzone was estimated through PLFA analysis
- There were seven monthly applications carried out from March until August with H₂Pro TriSmart rates 25L/ha initially followed by 10L/ha. Vitalnova SMX was applied at 10L /ha
- The H₂Pro TriSmart programme significantly increased % VMC at depths of 0-3.8cm and 0-7.6cm as well as Turf Quality Score and NDVI
- Tank-mixing Vitalnova SMX with H₂Pro TriSmart did not affect VMC compared with H₂Pro TriSmart only applications but did significantly enhance Turf Quality Score over the untreated plots both earlier and later in the season compared to H₂Pro TriSmart only
- H₂Pro TriSmart applications significantly increased bacterial, fungal and total microbial biomass in the rootzone compared to the untreated plots
- Vitalnova SMX applications increased fungal, total microbial biomass and microbial species diversity compared to H₂Pro TriSmart only

METHODS

The trial was located on a turf nursery at St Andrews Links and maintained to golf green standards. Nutrition and irrigation as per standard practice for the site was applied. The trial consisted of 1m² plots with treatments arranged in a randomised block design with 5 replicates per treatment. Applications were applied at approximately 28-day intervals with a total of seven applications from early March.

Untreated plots received no wetting agent or biostimulant applications. The H₂Pro TriSmart treated plots saw an initial rate of 25L/ha followed by monthly rates of 10L/ha. The H₂Pro TriSmart + Vitalnova SMX tank-mix treated plots had the same rates of H₂Pro TriSmart but tank-mixed with Vitalnova SMX at 10L/ha.

Assessments were carried out on a fortnightly period which included VMC using a Field Scout TDR 350, NDVI using a Greenseeker Handheld active NDVI unit as well as Visual Turf Quality Scores. At the end of the trial, cores were taken to a depth of 11cm and sent to Eurofins Agro Testing UK for PLFA analysis via their Soil Life Monitor Service.



Plate 1: Images being collected from the trial area in March 2022

RESULTS

Consistent treatment effects from H2Pro TriSmart applications on % VMC in the rootzone were seen from late May onwards (Figure 1). The greatest moisture benefits of the H2Pro TriSmart programme were seen in June and August with increases of 7 and 8 VMC % points. These improvements resulted in significantly greater Turf Quality Scores for the H2Pro TriSmart-treatments (Figure 2) throughout the Summer months with increases consistently between scores of 1 and 2. Tank-mixing Vitalnova SMX with H2Pro TriSmart did not affect the % VMC compared to H2Pro TriSmart only applications but there were benefits in Visual Turf Quality Score. Plots treated with the H2Pro TriSmart + Vitalnova SMX tank-mix had significantly greater Turf Quality Scores vs. untreated plots both earlier and later in the season compared to plots treated with H2Pro TriSmart only as highlighted by the areas in blue in Figure 2. From May 30th until August 17th, H2Pro TriSmart drove the benefits in Turf Quality Score.

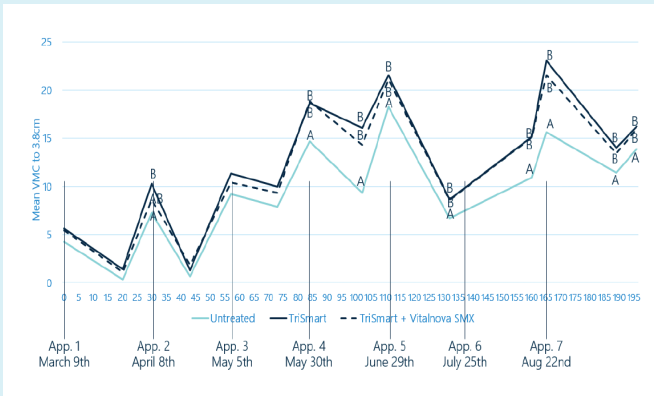


Figure 1: Mean % VMC throughout the trial period for depths of 0-3.8cm. Where treatments do not share the same letter, there is a significant difference in mean % VMC

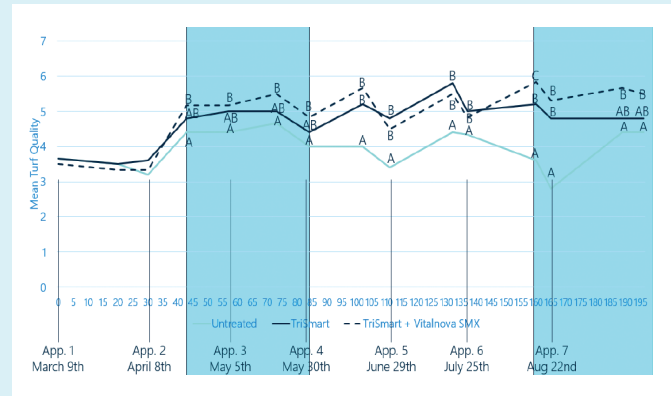


Figure 2: Mean Visual Turf Quality Score throughout the trial period. Where treatments do not share the same letter, there is a significant difference in mean Turf Quality

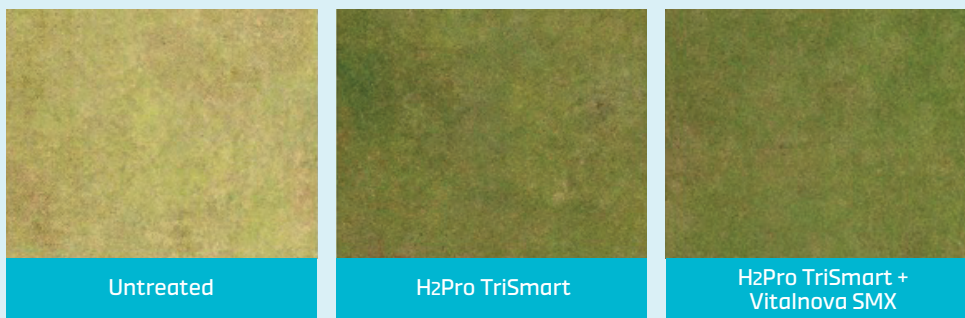


Plate 2: Typical images of untreated, H2Pro TriSmart and H2Pro TriSmart + Vitalnova SMX plots from August 2022.

PLFA microbial analysis of rootzone cores taken at the end of the trial revealed significant increases in total, fungal and bacterial biomass in plots treated with H2Pro TriSmart compared to untreated (Table 1). The addition of Vitalnova SMX saw further increases in total and fungal biomass as well as increased microbial (PLFA) diversity (Table 1).

		Untreated Mean	TriSmart Mean	TriSmart + Vitalnova SMX Mean
Microbial biomass	mg PLFA/kg	6.8 (A)	7.8 (B)	8.4 (C)
Total bacteria	mg PLFA/kg	5.6 (A)	6.6 (B)	6.8 (B)
Total fungi	mg PLFA/kg	0.76 (A)	0.9 (B)	1.04 (C)
PLFA diversity	mg PLFA/kg	3.1 (A)	3.12 (A)	3.18 (B)

Table 1: Mean rootzone microbial biomass figures for untreated, H2Pro TriSmart and H2Pro TriSmart + Vitalnova SMX plots. Where the letters in brackets are not shared this indicates significant treatment differences in biomass.

CONCLUSION

The trial demonstrated the benefits of an H2Pro TriSmart programme on moisture levels and turf quality. Furthermore, tank-mixing H2Pro TriSmart with Vitalnova SMX provided improvements to Turf Quality Scores both earlier and later in the season compared to a wetting agent only programme. Applications of both products in a programme could provide enhanced turf quality running up to, during and after peak summer stress in golf green turf. In addition, both H2Pro TriSmart and Vitalnova SMX can increase the microbial biomass in the rootzone.

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