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SOIL-BASED ROOTZONES AND TOPDRESSINGS

Independent scientific trials, by STRI, support the use of soil-based rootzones and topdressing materials for constructing, maintaining and repairing winter games pitches

I'VE CHAMPIONED SOIL-BASED rootzones and topdressings for many years. As a trained agronomist, former amateur rugby player and RFU volunteer groundsperson, I understand from personal experience the pressures on grassroots clubs and their groundspeople to deliver playable pitches, week after week, throughout the season, with little budget.

If it isn't the climate providing challenges, it's budgetary constraints. With this in mind, I was keen to prove scientifically that using soil-based rootzones and topdressing materials for constructing, maintaining and repairing winter turf pitches could reduce the requirement for both irrigation and additional inputs of inorganic fertilisers.

As both these aspects can have a marked impact on maintenance budgets, especially for grassroots clubs, I commissioned independent scientific trials by the STRI on Landscape20 topsoil and Sports&Turf top-dressing products, to give clubs the independent, scientific evidence

that is needed when considering alternatives to traditional sand and compost-based mixes.

The trials

The four trials were carried out under the head of research Dr Christian Spring at STRI Research in Bingley, West Yorkshire, during the autumn and winter of 2020. Each trial was run as a randomised complete block design, with each treatment replicated five times in pots measuring 11cm x 11cm x 12cm deep. The trials compared British Sugar TOPSOIL's Landscape20 65:35 and Sports&Turf 90:10 sand and soil mix products with the following sports-growing media:

- USGA style free-draining mix (80:20 sand:peat mix)
- Tee's mix (70:30 sand:peat mix)
- Sand: soil mix (80:20 sand:soil mix)
- Clay loam soil

Note: Peat was used experimentally to ensure peat-amended mixes did not have a greater nutrient reserve compared to other treatments.

Trial pots B, C and D started in September 2020 in STRI's greenhouse and finished in mid-November.

Trial A pots were placed in a controlled environment chamber to help facilitate the creation of moisture deficit. The trial was started in November 2020 and concluded in February 2021.

Assessments

The weekly assessments on each of the four trials included:

- Turf density
- Turf quality
- Turf colour
- Visual turf uniformity
- Turf stress
- Sward height
- Rooting length and density score

Trials A (seeded drought trial) and C (seeded nutrient trial) were also assessed for grass germination and rate of maturation, the latter were assessed twice weekly for the first month of the trial and weekly thereafter.



Andy Spetch speaks with Dr. Christian Spring (left) about the trial

The results

TRIAL A – assessing water retention of the six sports growing media mixes in pots when seeded.

Landscape20 performed well under moisture deficit and was the optimum treatment, providing significant benefit in terms of turf density, turf quality, turf colour and visual uniformity. Although seeds sown in Landscape20 took longer to complete germination compared to other treatments, the grass matured more quickly. Sports&Turf performed similarly to the sandier mixes in the trial, although growth tended to be slower.

TRIAL B – assessing water retention of the six mixes in pots when turfied.

Landscape20 performed well as one of the optimal mixes. Turf laid on the growing medium was able to withstand moisture deficit better than on sandier materials, but it also had optimal root density, being closer to that found on the sandier rootzones.

Sports&Turf performed similarly to the comparative growing media.

TRIAL C – assessing nutrient retention of the six mixes in pots when seeded.

This trial tested treatments with and without a pre-seeding fertiliser. Both British Sugar TOPSOIL sand soil mixes performed strongly in comparison to similar mixes, and had visible and measurable benefits.

At the end of the trial Landscape20's greater natural soil nutrient reserves resulted in less turf stress and optimum growth rates throughout.

In the pots without pre-seeder fertiliser, turf grown in Landscape20 had longer rooting length than comparison treatments, as a result of healthy grass growth combined with open pore

structure allowing root development.

At the end of the trial, turf grown in Sports&Turf tended to be greener and have less visible symptoms of turf stress and the longest roots compared to comparison treatments.

TRIAL D – assessing nutrient retention of the six mixes in pots when turfied

Differences among treatments in this trial were less clear than when pots were seeded, due to the turf layer providing a degree of pre-existing life support network for the grass. Landscape20 and Sports&Turf tended to perform broadly similarly to other mixes.

Conclusion

These trials illustrate the benefits to be derived from using soil-based products on soil-based pitches rather than sand-based dressings and rootzones in terms of moisture retention and nutrient availability.

When mixed with the correct sand, and with the correct maintenance programme in place, sustainably sourced, soil-based rootzones and topdressings will deliver a good supply of valuable nutrients to encourage turf growth and establishment where areas of heavy wear, such as goal mouths and scrummage areas, require overseeding, while delivering the drainage rates needed.

The trials showed that the 90:10 sand and soil topdressing mix can also be used to establish turf. In the seeded trials it produced turf that tended to be greener and have less visible symptoms of turf stress. It also produced turf with the longest roots when compared to other treatments. This gives roots greater anchorage, leading to reduced turf loss and greater nutrient and water recovery at depth. On established turf, it performed broadly similar to the other treatments, providing an effective turf-bed growing media and demonstrating enhanced soil nutrient reserves.

The 65:35 sand and soil mix performed very strongly in the trials, displaying good levels of natural soil-nutrient reserves leading to less turf stress and promoting good growth. It has been successfully used for many years in the construction of pitches, but it is unsuitable for use as a topdressing. ■

For more details on these trials, contact topsoil@britishsugar.com

The trials from A to D



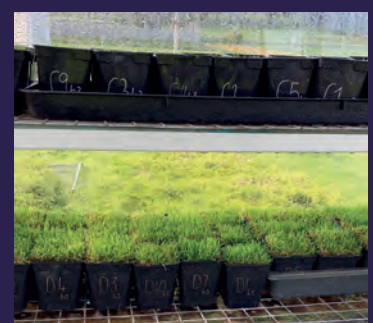
A This trial assessed water retention in pots when seeded



B This trial assessed water retention in pots when turfied



C This trial assessed nutrient retention in pots when seeded



D This trial assessed nutrient retention in pots when turfied