Guest Editorial

IS SAND-CAPPING A GOOD IDEA?

An article in the summer edition of the *Sports Turf Manager* by Kowalewski, Crum and Rogers with the Michigan State University turf research group deserves comment. Their concept of repeated yearly sand-capping to build a sand root zone over a four year period and thus improve the performance of sports fields is worthy of consideration on heavier textured soils, however, the user should be aware of potential pitfalls.

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The original idea, known as a sand carpet, was successfully developed at The Sports Turf Research Institute at Bingley in the UK several decades ago, although it was not designed to provide the depth of sand the authors of this article propose. Furthermore, the end product of the Michigan system after four years of repeated topdressings will, in part, be equivalent to the California Construction Method described in Section 4.3.5 of the Sports Turf Association's *Athletic Field Construction Manual*.

The system proposed, however, calls for 10-15 cm of a sand-based root zone over the original soil surface with a subsurface drainage system at 6 metre spacing. This is only half the depth of sand required for an STA Category 1 field and double the spacing of the drainage lines for the California Construction Method. The proposed depth of sand and spacing of drainage lines will produce drainage draw-down lines that have near saturated conditions for extended periods of time at the mid point between the drainage lines, resulting in the potential loss of use of the field for these periods or severe damage to the turf if used.

Movement of water from the mid-point between drainage lines occurs by lateral and vertical flow. Under their system, water movement will be primarily by relatively slow, capillary lateral flow with little influence of the stronger force of gravity on the flow. Thus to reduce the possibility of periods of saturation, the drain lines should be placed relatively close together. Vertical flow by gravity will not occur until a saturated zone is built up at the interface between the sand capping

and the underlying soil. The rate of vertical flow will then be dependant on the water permeability of the underlying soil. The finer the texture and the greater the compaction of this soil, the lower the rate of flow.

For top performance, the sand which is used should meet the specifications outlined in Section 4.4.4.1 of the STA *Manual.* In order to have uniformity in the sand root zone, which is necessary for proper water movement, a guaranteed supply of the identical sand at the same price over four years must be obtained, an unlikely guarantee by any aggregate supplier.

A sand depth of 30 cm is required to maximize the water retention in the root zone provided by a perched water table at the interface between the sand and the underlying stone layer. Reducing the depth results in less water storage and greater reliance on irrigation. Increasing the depth increases the costs.

The proposal is based on a cost deferment hypothesis. For the system to work, two major expenses, drainage and irrigation, must be incurred prior to the addition of any sand. Using the authors' figures, about 50% of the total cost must be provided up front to obtain the standard of a Category 1 field while deferring a fully functional field for three more years.

This concept requires further investigation. ♦

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