



"The edge of failure is determined by how the green was constructed, the cultivar, the budget, the equipment, and most importantly, your talent."

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The edge of failure

Several years ago, Dr. Joseph DiPaola and I led a seminar about turfgrass stress. Dr. DiPaola started the seminar off by sharing our philosophy of turfgrass management, which basically stated that we manage to the "edge of failure." Given a starting point of healthy turfgrass, we begin to move our turf — in this case a putting green — toward a more functional surface.

The benchmark we used for putting green functionality was green speed. From a management perspective, as we push our healthy turf to be more functional we move along the continuum of healthy turf toward the "edge of failure." It's analogous to the "fiscal cliff." Considerable anxiety existed about whether we would go over the cliff, wreaking havoc on our economy.

On putting greens, we face the same anxiety as we push toward the edge of failure. Visually, for me, the edge of failure was similar to the cliff on a plateau. If we push our putting green over the cliff, it crashes to the bottom of the basin. There goes our healthy turf.

Unlike the fiscal cliff, where we knew exactly when and what conditions would trigger the fall, knowing when a putting green is approaching the edge of failure is not clearly defined. The edge of failure is determined by numerous factors, including how the green was constructed, the cultivar or variety used, the maintenance

budget, the equipment used and how it is maintained, and most importantly, your talents as a superintendent in achieving the goals you've set.

As we move toward the edge of failure, what makes us back away from the edge? Unfavorable environmental conditions such as temperature, moisture, light or water quality can make us slow down or back off. In practical terms this may mean switching from grooved roller to solid, raising the height of cut, or reducing the frequency of mowing, just to name a few.

Given stressful environmental conditions, it's still difficult to know precisely how much we can move forward toward the edge and how far we should move back. That's because biological systems are complex and unpredictable.

To show just how unpredictable they are, I use the example of a sparrow. I can take a dead sparrow, throw it up in the air and calculate its flight pattern. But if I take a live sparrow and throw

it up in the air, I have no clue what its flight pattern will be. Non-living objects are fairly easy to predict. Living organisms, not so much.

We, however, live in a world of metrics. Government, business and yes, universities, run on metrics. Often metrics quantify information but don't speak as clearly to quality. In golf, the Stimpmeter quantifies green speed and provides us with a number, regardless of conditions. Thus, we have a quantified Stimpmeter number such as 11 then argue for or against what that number means based on qualitative biological factors such as cultivar, green construction and more.

Given that putting green management is highly variable relative to the Stimpmeter, what do I go off and do? I asked the Greater Cincinnati Golf Course Superintendents Association "At what green speed do you see turf injury?"

The survey was done anonymously during the summer stress period through a middle person, so I did not know the courses or the superintendents. The survey was not scientific and serves only as a point of discussion, but I found that at Stimpmeter readings of 9 feet 6 inches there was 20 percent turf injury; 10 feet 6 inches there was 60 percent turf injury; 11 feet there was 90 percent turf injury; and 12 feet there was 100 percent turf injury.

What's interesting about this small amount of data is how it provides a probability of success or failure given a certain green speed. As we get questioned about how fast or firm we can go with our putting greens, given all the variables that need to be accounted for I am afraid that we're going to have to define the edge of failure based on probabilities — whether I like it or not.

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