

Q: The pH of our greens, tees and fairways seems to be rising a little over the years. Two questions:

A. How much error is there in pH meter readings from year to year?

B. Could irrigation water from an adjacent lake—the source of our water—possibly be adding enough CaCO<sub>3</sub>/MgCO<sub>3</sub> to increase soil pH?—GRANT COUNTY

A: If you're seeing a long-term trend in rising pH, the reason is not likely to be the readings themselves. Soil pH is affected by the amount of soluble salts present. The more soluble salt, the lower the pH reading. Thus, if you took your soil samples within a week or so after fertilization one year and 3 to 4 weeks after fertilization the next year, chances are the pH readings would be somewhat higher the second year. This does not, however, account for a long-term trend in rising pH.

The pH of Wisconsin lakes ranges from about 4.5 for northern bog lakes to 8.5 for so-called marl lakes that occur in regions with limestone bedrock. Have the pH of your lake water checked. If it's above 7.0, this is the most likely reason why your soil pH is gradually rising.

Q: My USGA greens are now 3 years old and isolated dry spots are epidemic. We buy wetting agent by the 55-gallon drum, literally. Will this condition ever improve or go away? I can't take it much longer. Any advice?—DODGE COUNTY

A: Welcome to the world of sand-based putting greens! I'm being a bit facetious in making this statement, but have you ever seen localized dry spot in a 3-year old push up green? I haven't. Localized dry spot is a widespread problem that perplexes researchers as well as superintendents. The problem seems to arise when humic acids coat sand grains, causing them to become hydrophobic—that is, they resist wetting. Exactly why sand-based greens are so prone to development of this condition is not known. I can tell you from our own experience that there is a definite relationship between the moisture retention capacity of the root zone mix and its tendency to develop localized dry spot. We're seeing the problem whenever the mix retains less than about 13% water at 40-cm tension. Where we've used organic amendments that result in the root zone mix retaining more than about 13% moisture, these greens are free from localized dry spot after 4 years.

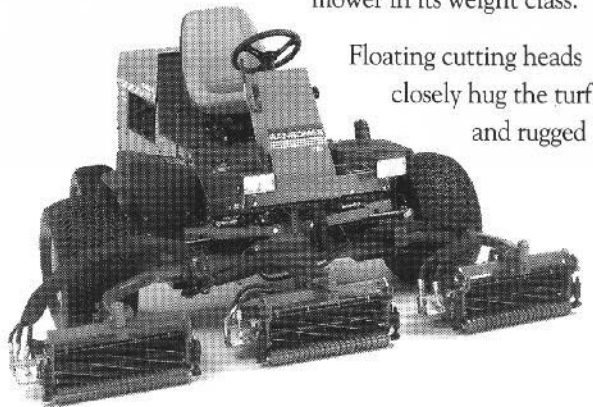
I have some unconfirmed suspicions about what favors localized dry spot. One, as I've already alluded to, is the use of root zone mixes that do not retain adequate amounts of water. This can be easily remedied, but probably not by staying within current USGA specs. As we've done, you can improve moisture retention by using peats that contain less than the 85% organic matter called for by the USGA. Another approach is to increase the peat content of the root zone mix above that recommended

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