MLSN newsletter #26

A modern method for soil test interpretation

Hello,

This 26th MLSN newsletter has a few important dates, recent writing and discussion about nutrient supply, and whether P and K are needed when N supply is reduced.

Upcoming events

- The International Turfgrass Research Conference is less than 2 months away, happening from July 12 to 16 at Karuizawa, Japan
- The Japan Turf Show is back at Makuhari Messe on November 6 and 7
- The Thai GCSA will hold their popular Sustainable Turfgrass Management in Asia conference again at Pattaya on March 9 to 11, 2026

Dynamic nutrient supply

One of the most effective ways to fertilize high-performance turf is also the most simple. It goes something like this: if you want the grass to grow faster, add more fertilizer, and if the grass is already growing fast enough, add less fertilizer.

That's very much not how experts advised fertilizing when much of the foundational turf research was done. I wrote about that in Historical nitrogen rates and discussed this in Nitrogen rate, pendulum swings, and anchoring. These were N rates that seem ridiculously high to us now—topping out at around 100 kg/ha (2 lbs/1000 ft²) per month!

With those kinds of N rates, grass grows a lot, and when grass grows a lot, it uses a lot of nutrients. It's no surprise, then, that the historical SLAN soil nutrient guidelines are so much higher than grass needs today. Times change, the way grass is managed changes, soil types change (think *sand*), and N rates today are a fraction of what they once were, but the SLAN guidelines remain at their same levels. The MLSN guidelines, on the other hand, are a modern method that ensures the grass is supplied with all the nutrients it can use, no matter the N supply or the growth rate.

I talked about this in an appearance on the USGA Green Section podcast: Hot Takes On Turf With Dr. Micah Woods. I hope you'll listen to the full episode, but if you want the soil nutrient and MLSN part, that starts at the 14-minute mark.

An effective method for adjusting nutrient supply in response to growth involves comparing the current growth of the grass to the expected growth: the Turf GvX.

- PACE Turf reference page on the GvX with spreadsheets
- ATC pages tagged Turf GvX

Chris Tritabaugh was recently on the Green Section podcast for an episode devoted to the GvX: Chris Tritabaugh on Using "Turf GvX" for Better Putting Green Management

What if you don't add N?

Grant Saunders from Hamilton Golf Club in New Zealand asked about the need to supply other nutrients (like P, K, Ca, etc.) when the grass is actively growing but one is *not* adding N. The grass is obviously using nutrients because it is growing rapidly, and should those elements be supplied even though N is not being added?

I replied that as long as I know the soil nutrient content, I am not going to worry about it. Presumably I'm keeping the soil nutrients from dropping below MLSN values. And the grass is growing while we are not supplying any additional nutrients. Let's say this happens for one month, with the grass growing faster than we want (as measured by clipping volume) so we do not supply any fertilizer during this month.

To be more specific, let's say we have a desired GvX of 50, and during this month the grass actually has a GvX of 110, growing 220% more than we want. Naturally we are not going to supply additional N in this situation, because we certainly don't want to stimulate any more growth. And at the start of this period, because we are using MLSN, we will know that K and P and Ca and Mg are present in the soil in ample amounts. During this month of growth at 220% the desired rate, how much depletion will we see in these four essential elements?

Let's say the growth potential during this month is 63%, which matches the average temperature through the year in Hamilton. By rearranging the GvX equation, I calculate that the actual clipping volume in this typical month of temperatures, with the GvX at 110, is 422 mL/m². We are trying to figure out how much P and K and Ca and Mg the grass is using, and whether we should think about resupplying those, even though we are not adding any more N.

I know Grant is growing browntop bentgrass (or colonial) rather than creeping bentgrass; for now let's use the numbers I'd use for creeping. We can expect those 422 mL of clippings to have a mass of about 27 g. Based on the current PACE Turf leaf nutrient normals, the grass growing at 220% of the desired rate in this typical month will use:

- 0.5 g of K
- 0.16 g of Ca
- 0.14 g of P
- 0.06 g of Mg

Let's say we have a rootzone with a bulk density of 1.43 g/cm³. In this case, a 1 g/m² use or supply corresponds to a 7 mg/kg (that's 7 ppm) change in the soil. From this calculation it becomes apparent that we are talking about negligible changes in soil nutrients. The soil K would go down by 3.5 ppm, the grass would use 1.1 ppm of Ca, 1 ppm of P, and 0.4 ppm of Mg.

When we know the soil test results and have ensured the soil nutrient levels are at or above the MLSN values, we don't need to worry about resupplying these elements.

More info

As usual, the PACE Turf and ATC websites are the place to get the latest updates, recommendations, and resources about MLSN and a wide range of other turf management topics.

I keep an updated "What's the best way to keep up with all you're doing?" page that provides a comprehensive answer to that question.

Thanks for reading.

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