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Feed the Soil or Feed the Turf?

**Don Savard*

Is your soil testing laboratory telling you to feed the soil, or feed the turf? If you don't know, you could be buying products that you don't really need. Now before you accuse me of suggesting that reputable soil testing laboratories don't know what they are talking about, let me explain that I learned something recently, and that is there are differences in the approach or philosophy that soil testing labs use when making recommendations. Whether the laboratory is part of a Land Grant University, a commercial lab or a Government agency, it will follow a philosophy that guides their interpretation of what they will recommend that you do. Let's look at three of the most common philosophical concepts.

The **Sustainable Level of Available Nutrient** (SLAN) concept refers to the approach of testing the soil for certain nutrients needed to sustain growth, and if a nutrient is lacking, you just add the nutrient. SLAN works pretty well for specific crops (yes, turfgrass is a crop) because the recommendations come from years of research of what worked best in the field for that crop on different soils in varying weather conditions. Most Land Grant University soil testing labs follow the SLAN concept because of their agricultural research mission.

Another approach is the **Basic Cation Saturation** (BCS) concept which suggests that the "balance" of exchangeable Calcium, Magnesium, Potassium, Sodium, and Hydrogen cations in the soil, within a specific percentage range, or, in specific ratios to each other, will promote maximum crop response. By adding additional amounts of the aforementioned basic cations, the balance can be manipulated. BCS is frequently used by commercial laboratories that do not have an extensive database for a specific crop response on a broad range of soils.

The third approach is the **Maintenance Fertility** (MF) concept of replacing the nutrients that have been removed or lost. MF might be helpful in instances when grass clipping are always collected, or nutrients are leached out of the soil. Sometimes the

MF concept is combined with the other two.

As you can see, these different philosophies are based on different assumptions about what the turf needs. The confusion can begin when you receive conflicting soil test reports for the same field from different soil testing laboratories (assuming, of course, that both labs received identical samples). Soil testing labs use different test extractants and methodology on different soils in different parts of the country because the extractants and methodologies are most effective within certain pH ranges and soil types. Another reason is that laboratories compare test results to research data from years of field trials of the crop in different soil conditions to help make recommendations. So, a laboratory in another part of the country (or the world) could make a different recommendation to you than a local laboratory based on their own research data. Commercial testing laboratories and Land Grant University laboratories often differ based on their research data base, or soil testing philosophy.

Which approach is best? Research done by the University of Kentucky beginning in 1977 on corn, and later on corn, soybeans and wheat indicated that crop yields were excellent for all philosophy concepts (including combinations of two) tested when the weather conditions were favorable, however, there were large differences in the amounts and kinds of fertilizers. This resulted in large differences in the costs, with high fertilizer costs giving no advantage in higher yields. Soil tests taken a few years later following the use of the various recommendations indicated that surplus fertilizer was being stored in the soil. Fertilizer rates based on SLAN cost the least and produced equivalent yields compared to the more costly recommendations based on the other philosophy concepts tested (Murdock, 1997).

Fertilizer supply companies frequently recommend soil testing laboratories whose testing philosophy and recommendations help to sell their products. There is nothing wrong with that, but beware of claims that certain soil amendments and nutrients will

perform miracles. Often these claims are anecdotal. Ask to see who did the research, when and where. The growth of any plant is limited most by the essential plant nutrient present in the least relative amount (Liebig's "Law of the Minimum").

Should you "fertilize the turf" or fertilize the soil? In today's economic and environmental climate, turf managers need to verify the philosophy behind the fertilizer recommendations given by the testing laboratories, and then develop an economically feasible and defendable fertility management program.

**Don Savard is the Athletic Facilities & Grounds Manager for Salesianum School, Wilmington, DE and Vice President of SFMANJ. donsavard@msn.com*

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- Plank, C. Owen, Soil Testing-Turf, Univ of Georgia Cooperative Exten Service Pub

- Murdock, Lloyd, Evaluating Fertilizer Recommendations, 1997, Univ of Kentucky Coop Exten. Pub

- Focus on Soil Testing and Nutrient Recommendations, 1994, Maryland Coop Exten, vol. 1, issue 2

- Oldham, Larry, Nutrient and Soil Management, Mississippi State Univ Exten Service, Nov. 8, 2000

- Gardiner, Duane T., Raymond W. Miller, Soils In Our Environment, 10th Ed, Pearson Prentice Hall. ♦

Continued from page 9

only mandatory measurements. All other measurements are "recommended" distances

9. Be graded so as not to allow standing water to accumulate either on the infield or in adjacent turf areas be it fair or foul territory

a. Sand slit drainage should be utilized in turf areas adjacent to skinned areas to eliminate the potential for standing water where existing slope is ineffective

10. Include dugout areas as a criteria for evaluating safety and playability

11. Include backstops and fencing as a criteria for evaluating safety and playability

12. Employ a proactive management plan designed to maintain safety and playability ♦

Field Tip

Certification Practice Test Questions To Go On Line

Do you know the answer to the following question?

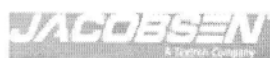
Perennial ryegrass plants do not produce:

- a) roots
- b) stillers
- c) stolons
- d) shoots

By the end of December, you will be able to "practice" taking the certification exam to help you prepare for the actual exam. Look for the announcement on the home page to access the questions and the answer key. To be eligible to take the test, you must have at a minimum, a high school diploma or equivalent, and achieve a minimum of 40 points earned through a combination of education and experience. To receive a full packet outlining the application process, contact lcraig@sportsturfmanager.com or call 800-323-3875. *(The answer is C = stolons)* ♦

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