

Cation Ratios and Soil Testing Methods for Sand-Based Golf Course Greens

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This research is being funded by a grant from the United States Golf Association to study the soil testing methods of sand-based greens and Ca/Mg/K fertilizer recommendations. This research was introduced in last year's field day report. At this time, there is no data or results to present in this report. This report is to reintroduce the background, objectives, and goals for those who have did not see last year's report.

Introduction:

Sands have low cation exchange capacities (CEC), which means applying the correct amount of fertilizer to provide adequate plant nutrition without causing nutrient leaching can be difficult. To further complicate the problem, the sand used for greens and athletic field construction is often calcareous. Calcareous sands will usually have higher pH values, which can lead to some nutrient deficiencies. Moreover, testing calcareous sands to determine nutrient levels and make fertilizer recommendations can be problematic. Many standard tests that are used today will dissolve calcium carbonate particles and change some of the values measured like Ca content and CEC.

Objectives:

1. To evaluate and correlate several existing soil extraction methods with tissue analysis to determine which type of extractant is best for sand based turfgrass systems.
2. To modify, if necessary, existing extraction methods to better suit turfgrass soil types.
3. To better understand how the BCSR theory and Ca/Mg/K ratios apply to turfgrass systems.
4. Improve current recommendations for Ca/Mg/K fertilization of turfgrass.

Research Methodology:

Currently, several soil samples have been processed by many different testing methods to evaluate different procedures. Also, a greenhouse project has been started to evaluate different Ca to Mg ratios. Two more greenhouse projects are being initiated to look at different Ca:K and Mg:K ratios.

Goals and Expected Results:

To develop a set of standard methods and models to be used in analyzing turfgrass soil samples, especially for calcareous sand samples. Improved understanding of Basic Cation Saturation Ratio Theory and Ca/Mg/K ratios used for fertilizer recommendations.