



Understanding the MSU Soil Test Report

*P.E. Rieke, G.T. Lyman, D.D. Warncke, D.L. Mokma, J.G. Dahl,
and J.R. Crum
Department of Crop and Soil Sciences*

Knowing the conditions of your soil is one of the most important factors in growing healthy lawn turf. Your county MSU Extension office can instruct you on how to take the sample and will assist you in getting your sample to the MSU Plant and Soil Nutrient Laboratory. The soil test report will describe current conditions and recommend an appropriate fertility program based on those conditions. The report includes an accurate description of soil pH, phosphorus, potassium, calcium, and magnesium levels, soil texture, and the nutrient holding capacity.

Fertilizing your lawn based on soil test recommendations can help protect water quality by minimizing over-application. This is particularly important on sensitive sites like waterfront properties.

Each section of the MSU soil test report is listed below along with an explanation of those sections that are the most important for turf growth. A sample report is located on the back as an example. Further assistance concerning the soil test report can be obtained from your county MSU Extension office.

SOIL TEST INFORMATION

Sample No. - identifies the site of the sample such as front lawn, back lawn, etc.

Acres - does not apply to lawn turf.

Soil Group - identifies the texture of the soil:

- 0 - organic (peat or muck) soils
- 1 - clay soils
- 2 - loam, clay loam, sandy clay loam soils
- 3 - sandy loam soils
- 4 - loamy sand soils
- 5 - sandy soils

Plow Depth - listed as 3 inches which is the typical soil sampling depth for lawns.

Previous Crop - identified as "Lawn" for established sites or "New Turf" if lawn is being established.

Manure - not applicable for lawns.

SOIL TEST RESULTS

Soil pH - the level of active soil acidity or alkalinity. Above 7.0 is alkaline; below 7.0 is acid. Turf grows well in pH ranging from 5.8 to 8.2. Michigan soils for turf growth are generally within this range.

Lime Index - an indicator of reserve or potential acidity in the soil and is used to determine the quantity of lime needed to correct the pH of an acid soil. It is only measured on samples testing less than pH 6.8. The homeowner does not directly use the Lime Index Information.

Phosphorus (P) - reported in pounds per acre (lb/A); P levels below 20 lb/A are very low; no phosphorus is recommended for lawns if the test is about 40 lb/A.

Potassium (K) - reported in lb/A; K levels below 120 lb/A are very low; no potassium is recommended for lawns if the test is about 250 lb/A.

Calcium (Ca) - reported in lb/A; generally adequate in Michigan soils particularly on high pH, high clay soils.

Magnesium (Mg) - reported in lb/acre. The nutrient balance between K, Ca, and Mg is described by the "Percent Bases" column. Mg levels are generally adequate for lawns but application is recommended if:

- Soil test values are less than 75 lb/acre in mineral soils or 150 lb/acre in organic soils.
- Magnesium % base is less than 3%.
- The magnesium percentage is less than the potassium percentage.

Iron (Fe), Zinc (Zn), Copper (Cu), Manganese (Mn) - analyses are made only if requested; not normally useful tests for lawns.

Organic Matter (O.M.) - not normally determined. Michigan topsoils are 1-4%, subsoils are 0-1%.

Cation Exchange Capacity (C.E.C.) - an indicator of the nutrient holding capability of the soil. The more clay or organic matter in a soil, the greater the cation exchange capacity. Typical examples are less than 4 for sands, 4-8 for loamy sands, 8-12 for sandy loams, and greater than 12 for loams, clay loams and clays. Soils with small cation exchange capacities require fertilization more frequently and a lower rate per application.

Fertility Index - gives the relative status of each nutrient; if the fertility index is very high (asterisks go completely across the scale), none of that nutrient is recommended.

FERTILIZER RECOMMENDATIONS

Major Nutrients - The recommendations shown on the lower portion of the report form are based on soil test results and turf information provided. Recommendations for nitrogen, phosphate (P205), and potash

(K20) are indicated. For home lawns these same recommendations can be used for two to three years after which time another test should be considered. For new turfs and high maintenance turfs soil testing is suggested every year.

Secondary Nutrients - Magnesium (Mg) is the only secondary nutrient for which a recommendation may be made on turf and is unlikely on Michigan lawns. If pH is low and lime is needed, use dolomitic limestone at the rate recommended. If pH is acceptable or high, use a magnesium containing fertilizer.

Micronutrients - Recommendations for micronutrients are not expected on Michigan lawns.

Lime - When the soil pH should be raised, a recommendation will appear in the Fertilizer Recommendations Box. This recommendation will be stated in pounds of limestone per 1000 sq. ft. for turf. If the soil is highly acid (pH below 5.5), another soil test should be taken the following year to determine if additional lime will be needed. Liming recommendations are based on the top 3 inches of soil for established turfs.

FOOTNOTES

Footnotes are given for special information to be helpful in making fertilizer applications. For example, it is generally recommended that no more than 1 pound of nitrogen should be applied per 1000 sq. ft. in one application.

SAMPLE SOIL TEST REPORT

Soil Test Information

Sample No: A
 Soil Group: 3 Sandy Loam
 Previous Crop: Lawn

Plow Depth: 3 inches
 Field:
 Acres:

Manure: No
 Type:

Soil Test Results

Soil pH 5.4	Lime Index: 65	Percent Bases	Fertility Index for Crop 1 ----Low ----- Medium -----High----
Phosphorus	124 lb/A		XX
Potassium	240 lb/A	10 %	XX
Calcium	964 lb/A	81 %	XX
Magnesium	65 lb/A	9 %	XXXXXXXXXXXX
Cation Exchange Capacity 9.0 me/100g			

Fertilizer Recommendations

Crop: Lawn	Nitrogen	Phosphate	Potash
	-- lb/1000 sq. ft. per year --		
Kentucky Bluegrass	2.5-5	0.0	0.5
Fine Fescue	1.5-3	0.0	0.5
Perennial Ryegrass	3-5	0.0	0.5
Minimum Maintenance Turf	1-2	0.0	0.5

Lime recommendation is 60 lbs/1000 sq. ft.

SPECIAL NOTES FOR CROP 1 (LAWN)

This lime recommendation is for the top 3 inches of soil. Maximum suggested single nitrogen application is 1.0 lb N/1000 sq. ft. Nitrogen rates can be decreased 20-40 % if clippings are returned. For shaded grass, decrease N by 1/2 and apply primarily in the fall. Magnesium tests low. Use dolomitic limestone - no more than 50 lb. / 1000 sq. ft. annually.