

SOIL ANALYSIS REPORT FOR NEW LAWN

04/17/10

SOIL AND PLANT TISSUE TESTING LAB
WEST EXPERIMENT STATION
UNIVERSITY OF MASSACHUSETTS
AMHERST, MA 01003

LAB NUMBER: S100412-701
BAG NUMBER: 91630

SOIL WEIGHT: 4.55 g/5cc
CROP: N TURF

BMC CORP/ CORSETTI
P.O. BOX 60
PINEHURST, MA 01866

COMMENTS: RDC3434@AOL.COM

SAMPLE ID: BMC TOPSOIL 1

LIMESTONE AND FERTILIZER RECOMMENDATIONS FOR NEW LAWN CONSTRUCTION

Soil pH is higher than desired. Do NOT add limestone.

Fertilizer (per 1000 sq ft): 1-2 lbs N, 0 lbs P2O5, and 0 lbs K2O.

Many fertilizer sources and rates may combine to provide acceptable turfgrass establishment either from seed or sod. One or two options based on this soil test follow:

Incorporate a 30-3-3 lawn fertilizer at 7 lbs/1000 sq ft into the top 3 to 4 inches of soil. Retest soil one year after turf establishment.

PLEASE read the enclosed fact sheets for more specific information on fertilization and liming procedures.

MICRONUTRIENT	PPM	SOIL RANGE	MICRONUTRIENT	PPM	SOIL RANGE
Boron (B)	1.5	0.1-2.0	Copper (Cu)	0.3	0.3-8.0
Manganese (Mn)	26.3	3 - 20	Iron (Fe)	3.9	1.0- 40
Zinc (Zn)	4.3	0.1- 70	Sulfur (S)	54.5	1.0- 40

SOIL pH 7.4 NITROGEN: NO3-N = 49 ppm
BUFFER pH 7.2 ORGANIC MATTER: 8.9 % (Desirable range 4-10%)

NUTRIENT LEVELS: PPM	Low	Medium	High	Very High
Phosphorus (P) 79	XX			
Potassium (K) 761	XX			
Calcium (Ca) 1954	XX			
Magnesium (Mg) 250	XX			

CATION EXCH CAP 15.2 Meq/100g PERCENT BASE SATURATION K=14.2 Mg=14.9 Ca=71.0 MICRONUTRIENT LEVELS ALL NORMAL

EXTRACTABLE ALUMINUM: 9 ppm (Soil range: 10-250 ppm)
SOLUBLE SALTS: 1.27 dS/M (Soil Range: 0.08-0.50 dS/M)
The lead level in this soil is low.

VISIT www.umass.edu/plsoils/soiltest FOR FURTHER INFORMATION ON SOIL TESTING AT UMASS.
TO CONTACT THE LAB: EMAIL soiltest@sis.umass.edu PHONE (413-545-2311).



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Turfgrass Lime and Fertilizer Recommendations

Periodic soil testing is an important part of any successful turfgrass management program. Since soil type, grass species, and desired turf quality level vary among turf areas; lime and fertilizer recommendations must be generalized to some extent. One must remember that a soil test is not an exact recipe for success. It should be incorporated into a coordinated effort to provide the cultural conditions required for healthy turfgrass. These include: (1) watering properly (amounts and timing); (2) insuring good drainage; (3) choosing seed carefully prior to establishment; (4) providing adequate light and air circulation; (5) using proper mowing techniques; (6) dethatching when necessary; and (7) preventing soil compaction. By liming and fertilizing properly and attending to the cultural requirements listed above one minimizes the chances for disease and weed problems and maximizes the likelihood of having healthy and attractive turfgrass.

Soil pH & Lime Recommendation – A soil of pH 4.0 is extremely acidic, while one of pH 8.5 is very alkaline. Though turfgrasses are adaptable to a wide soil pH range, they generally grow best at levels between 6 and 7. Ryegrasses and bluegrasses prefer a soil pH near 7. Bentgrasses and fescues perform best at pH levels near 6. Since the climate and rock-types of New England tend to produce acid soils, limestone is commonly recommended to raise soil pH.

It is unnecessary to lime soils in turfgrass unless the soil pH is less than 6.4. Liming soils to pH levels above 7.5 can result in micronutrient deficiencies (particularly if certain woody ornamentals are part of the landscape). Lime according to **your** recommendation. Since dolomitic (high magnesium) lime is so commonly available in our area, many soil tests show high magnesium levels. In these instances; a calcitic (calcium-rich) lime is often recommended. This can be difficult to find at lawn supply dealers. In this case, simply use the best available product. Although lime can be applied at any time of year, early spring is best for turfgrass. Late fall applications have been associated with the development of snow mold. Ground limestone and pelletized lime are the two most common liming agents used on lawns. Ground lime is usually cheaper, but the dust it produces can be a nuisance. Pelletized lime is more expensive (although prices have dropped), but “cleaner” with which to work. The choice of which to use is a personal one. Claims of superiority of one over the other are exaggerated.

Buffer pH, Cation Exchange Capacity, & Percent Base Saturation – **Buffer pH** is a measure of the soil’s reserve acidity. A value higher than 6.8 indicates that very little or no acidity must be neutralized through liming. Values decreasing from 6.8 indicate increasing amounts of reserve acidity. An acid soil with a significant amount of organic and/or clay will have a lower buffer pH (thus higher lime requirement) than a sandy acid soil (with the same soil pH) with little organic matter. This is because lime must neutralize acidity residing on the surfaces of the humus (organic matter) and clay, before one realizes a rise in soil pH to the desired level.

The surfaces of soil particles are often electrically charged. The results in a soil’s capacity to attract oppositely charged substances in the soil water surrounding them. Most often the soil is negatively charged and attracts positively charged ions (cations) to its surfaces. Calcium, magnesium, and potassium are examples of plant nutrients held in this way. These basic (not acidic) cations are available to plants. Acidic cations (e.g. aluminum and hydrogen) can also be adsorbed on the surfaces of soil particles. The sum of these is referred to as the soil’s **Cation Exchange Capacity**

(CEC). A CEC of 10 to 15 is typical and usually adequate. It indicates that the soil has either a sufficient amount of humus (organic matter) or reactive mineral material (clay and fine silt). Values below 6 may indicate that the soil will have trouble supporting good turf growth unless special management techniques are employed. The proportion of basic cations held by the soil is referred to as **Percent Base Saturation**. A good balance is recommended. For example, a soil with base saturations of calcium 70%, magnesium 12%, and potassium 4% is considered well balanced. There are no strict limits, but a properly limed and fertilized soil will approach these values.

Organic Matter – The percentage of organic matter is determined only if requested. Organic matter in soils can improve nutrient and moisture retention, drainage, and aeration. It can also help prevent compaction. What level is appropriate will depend on the other characteristics of your soil and the turf management scheme employed. Values between 7% and 10% are generally acceptable. Building organic matter to an acceptable level is best accomplished prior to establishment. Contact the lab for more information.

Nutrient Levels

Nitrogen (N) – Nitrogen, as nitrate ($\text{NO}_3\text{-N}$) and ammonium ($\text{NH}_4\text{-N}$) are routinely measured as part of the soil test. These values, however, are not used to make nitrogen recommendations, but only used to detect extreme soil conditions. This is because nitrogen is a very dynamic and easily transformed element in soil. The turf's actual need for nitrogen additions may bear little relation to soil test levels. The best way to determine N need is to observe the color, density, and vigor of the turfgrass. If it is green enough for your tastes, is fairly dense, and is growing rapidly enough to require mowing once or twice a week in the spring and early fall, nitrogen is probably not currently needed. However, turf requires a regular supply of N to maintain quality. We recommend that a total of 3 lbs/ 1000 square feet be supplied each growing season, split over 3 or 4 applications.

Phosphorus (P) – Phosphorus appears on fertilizer bags as P_2O_5 (phosphorus pentoxide). Your recommendation is also expressed in this way. P fertility is most important during grass establishment, when good root development is vital. Since P does not move readily through the soil, it is important to incorporate sufficient P into the top six inches of soil prior to seeding new turf or laying sod. Fertilization of established turf will not increase quality as noticeably as will N, but moderate P soil levels should be maintained.

Potassium (K) – Potassium appears on fertilizer bags as K_2O (potassium oxide). Your recommendation is also expressed in this way. Turf deficient in K is unable to utilize nitrogen and water efficiently, and is more susceptible to disease, heat, cold, and drought stress. When possible, choose fertilizers containing potassium as the sulfate over those containing potassium chloride (muriate of potash). Potassium sulfate is less apt to “burn” turf if over applied.

Calcium (Ca) and Magnesium (Mg) – Properly limed soils usually have sufficient Ca and Mg.

Aluminum (Al) – Aluminum is toxic to some plants under acid soil conditions. It should not be a problem for turfgrass if the soil has been properly limed.

Organic Lawn Care – Interest has grown in organic methods of lawn care. The recommendations provided with your soil test (N, P_2O_5 , and K_2O) still apply. Organic amendments are generally lower in nutrient content, so target soil test levels may take longer to attain. We, however, encourage efforts in this area. More information on this topic is available in **Turf IPM Facts** (see below).

Micronutrient and heavy metal levels are not reported on your soil test report unless they are out of the normal range. If soil lead is elevated refer to the separate fact sheet enclosed with these results. For detailed information on Turfgrass Management we suggest you contact the UM Extension Bookstore at (413) 545-2717. The publications **Turf IPM Facts** and **Professional Turfgrass Management Guide** are excellent resources on lawn care.