AgSource LABORATORIES

300 Speedway Circle, Suite 2
Lincoln, NE 68502
Phone 402-476-0300

SOIL ANALYSIS

Submitted by

Submitted for

Laboratory Sample #

Date Received
5-Sep-2017

Date Reported
11-Sep-2017

Information Sheet #

Laboratory Turnaround **6 Days**

Samples Will Be Stored Until **20-Sep-2017**

SUMMARY REPORT OF ANALYTICAL RESULTS

Sample Number	% Organic Matter	Nitrate N ppm	Phosphorus ppm IF pH < 7.1	Phosphorus ppm IF pH > 7.1	Potassium ppm	Magnesium ppm	Calcium ppm	Sulfur ppm	Zinc ppm	Manganese ppm	Copper ppm	Iron ppm	Boron ppm
PGRN	1.3	10.0	----	5	86	146	1008	29.0	2.7	4.5	1.0	37.1	1.5
GRN1	1.4	12.2	----	5	90	136	897	32.0	2.8	5.4	0.9	31.6	1.4
GRN6	1.5	9.5	----	6	98	141	967	52.0	3.8	5.3	1.0	35.4	1.4
GRN10	1.2	12.4	----	5	103	150	908	34.0	2.3	4.0	0.7	29.9	1.4
Average	1.4	11.0		5	94	143	945	36.8	2.9	4.8	0.9	33.5	1.4

SUMMARY OF ANALYTICAL RESULTS

Sample Number	Soil pH	Buffer Index	Excess Carbonate	Soluble Salts mmhos/cm	Sodium ppm	Bulk Density
PGRN	8.2	----	M	0.38	230	1.40
GRN1	8.1	----	M	0.40	231	1.47
GRN6	8.1	----	M	0.50	300	1.48
GRN10	8.1	----	M	0.38	201	1.38
Average	8.1		M	0.42	241	1.43

CATION EXCHANGE CAPACITY

Sample Number	ACTUAL % OF TOTAL CEC % K	% Mg	% Ca	% Na	% H	Total CEC
PGRN	2.9	16.3	67.4	13.4	0.0	7.5
GRN1	3.4	16.5	65.4	14.7	0.0	6.9
GRN6	3.3	15.5	63.9	17.2	0.0	7.6
GRN10	3.8	18.0	65.5	12.6	0.0	6.9
Average	3.4	16.6	65.6	14.5	0.0	7.2

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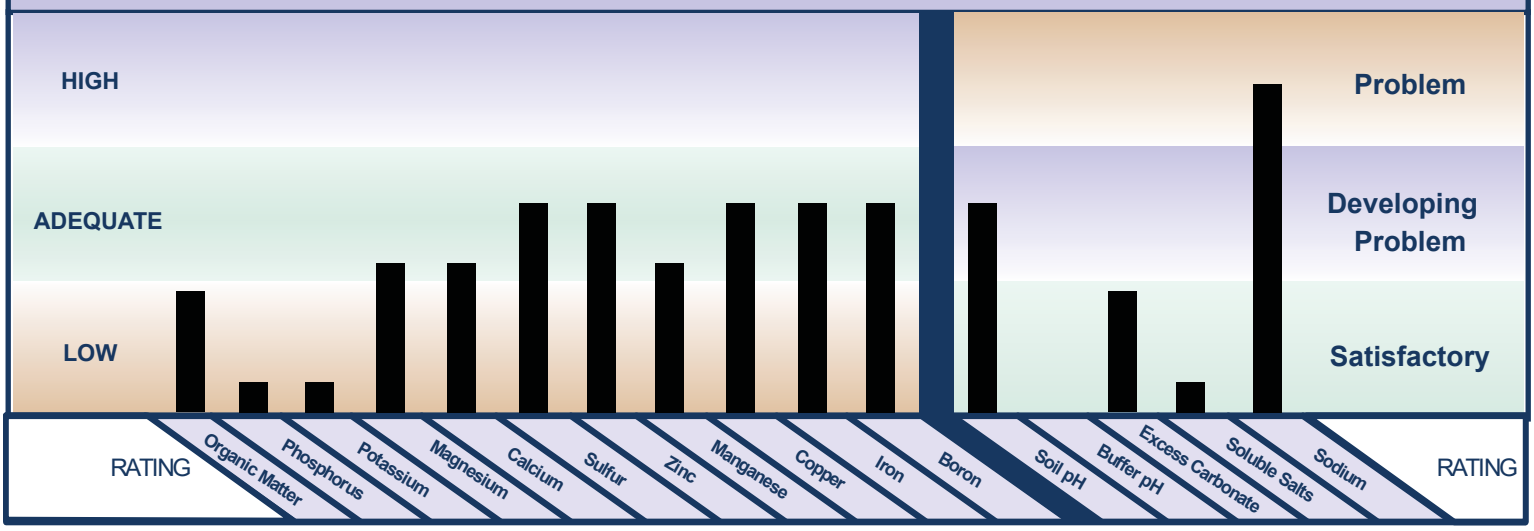
GRAPHIC SUMMARY OF WEIGHTED AVERAGE TEST RESULTS



SUMMARY OF SOIL FERTILITY AND PLANT NUTRIENT GUIDELINES

Sample Number	Crop Yield or Turf/Ornamental Code	Lime Gypsum Sulfur	PLANT FOOD NEED IN: Lbs/1000 sq ft N	P_2O_5	K_2O	MgO	S	Zn	Mn	Cu	Fe	B
PGRN	Greens	Gypsum 26	3.8	2.9	4.0	0.3	0	0	0	0	0	0
GRN1	Greens	Gypsum 27	3.7	2.9	3.9	0.3	0	0	0	0	0	0
GRN6	Greens	Gypsum 38	3.8	2.9	3.8	0.3	0	0	0	0	0	0
GRN10	Greens	Gypsum 22	3.7	2.9	3.7	0	0	0	0.0	0	0	0
Average	Greens		3.8	2.9	3.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0

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Additional Tests

Sample Number	PGRN	GRN1	GRN6	GRN10
Salinity Ammonium Nitrogen ppm	0.1	0.1	1.5	0.1
Salinity Bicarbonate ppm	87.86	87.86	91.52	91.52
Salinity Boron ppm	0.56	0.60	0.54	0.58
Salinity Calcium meq/L	1.98	3.41	4.96	3.82
Salinity Chloride ppm	197.1	288.2	429.0	277.2
Salinity Copper ppm	0.06	0.06	0.06	0.05
Salinity ECE mmhos/cm	1.27	1.86	2.48	1.69
Salinity Iron ppm	1.3	1.0	0.6	0.4
Salinity Magnesium meq/L	0.89	1.50	2.20	1.83
Salinity Manganese ppm	0.15	0.22	0.14	0.10
Salinity Moisture %	44.20	38.39	41.46	46.13
Salinity Nitrate Nitrogen ppm	19.8	25.1	21.4	24.0
Salinity PO4 ppm	2.99	3.60	2.58	2.58
Salinity Potassium meq/L	0.32	0.49	0.68	0.57
Salinity SAR	6.38	7.04	7.34	5.12
Salinity Silicon ppm	5.7	4.8	4.2	4.0
Salinity SO4 ppm	140.7	254.1	334.3	222.9
Salinity Sodium meq/L	7.6	11.0	13.9	8.6
Salinity Zinc ppm	0.1	0.1	0.1	0.1

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SOIL HEALTH ASSESSMENT

SAMPLE ID: PGRN

		0 - 9	10 - 29	30 - 50
Soil Health Score	16.4			
		0 - 60	61 - 150	151 - 300
Solvita CO2 Respiration ppm	47.9			
		0 - 7	8 - 19	20 - 30
C:N Ratio	4			
		0 - 149	150 - 300	301 - 400
Total Carbon ppm	137.0			
		0 - 24	25 - 60	61 - 100
Total Nitrogen ppm	33.2			
		0 - 4	5 - 100	101 - 150
Mineralizable N ppm	44.6			
		0 - 2	3 - 35	36 - 60
Mineralizable P ppm	3.1			

SAMPLE ID: GRN1

		0 - 9	10 - 29	30 - 50
Soil Health Score	17.1			
		0 - 60	61 - 150	151 - 300
Solvita CO2 Respiration ppm	49.7			
		0 - 7	8 - 19	20 - 30
C:N Ratio	4			
		0 - 149	150 - 300	301 - 400
Total Carbon ppm	155.0			
		0 - 24	25 - 60	61 - 100
Total Nitrogen ppm	36.8			
		0 - 4	5 - 100	101 - 150
Mineralizable N ppm	47.8			
		0 - 2	3 - 35	36 - 60
Mineralizable P ppm	22.7			

SAMPLE ID: GRN6

		0 - 9	10 - 29	30 - 50
Soil Health Score	14.9			
		0 - 60	61 - 150	151 - 300
Solvita CO2 Respiration ppm	38.1			
		0 - 7	8 - 19	20 - 30
C:N Ratio	4			
		0 - 149	150 - 300	301 - 400
Total Carbon ppm	162.2			
		0 - 24	25 - 60	61 - 100
Total Nitrogen ppm	39.5			
		0 - 4	5 - 100	101 - 150
Mineralizable N ppm	37.1			
		0 - 2	3 - 35	36 - 60
Mineralizable P ppm	13.6			

Soil Health Score
Calculated by combining five measurements of the soil, including microbial respiration and the availability of carbon and nitrogen, into a simple number that ranges from a low of 0 up to 50. Increasing this score indicates an improvement in Soil Health. Scores above 20 are considered very good. Higher respiration rates or lower C:N ratios increase the score.

Solvita CO2
Measures the respiration rate of the soil micro-organisms. A dry sample is allowed to absorb water and is kept in a sealed chamber for 24 hours. This one-day Solvita CO2 measurement predicts the average respiration rate in the soil under normal conditions. Increasing respiration values are a sign of vigorous microbial growth. Respiration could be improved by stimulating microbes with the addition of organic matter, readily available nutrients, or biological products.

C:N Ratio
Measures the availability of the two most important nutrients for micro-organisms in the soil. Carbon is used as an energy source and nitrogen is a requirement for building proteins and enzymes. A desired C:N ratio for a productive soil with 3 to 5 % organic matter would be around 10 or 12. The right balance of carbon and nitrogen is important. A high number is not better in this case! Low ratios can be improved with the addition of decomposable carbon. High ratios can be improved with the addition of Nitrogen.

Total Carbon
Used in determining the C:N ratio, soluble carbon is the energy source that stimulates biological activity in the soil. These sugars and carbohydrates that are secreted from plant roots are readily used by micro-organisms for growth when these populations die, the larger carbon compounds remain as part of the organic matter.

Total Nitrogen
Used in determining the C:N ratio, this water extraction includes organic forms of nitrogen such as, soluble organic matter, proteins and other byproducts of decomposition, as well as inorganic nitrate and ammonium nitrogen. This soluble nitrogen is easily leached form the soil with water movement or can be converted to gas if the soil is saturated with water. Organic forms of nitrogen are converted to inorganic forms as byproducts of the biologic processes naturally occurring in the soils.

Mineralizable Nitrogen and Phosphorus
Estimates the potential release from organic sources of these elements. Mineralizable N comes from the easily decomposable organic material in the soil such as the microbial biomass or manure and plant residues. If the Solvita value rises above 50 and the C:N ratio is in the range of 8:1 to 15:1 this organic matter will release increasing amounts of N for plant uptake. Mineralizable P increases in the same way as the Mineralizable N because the source of this available P is the same easily decomposed organic matter in the soil. Fertilizer recommendations can be adjusted to account for this release by subtracting from the amounts indicated in the fertilizer guidelines (for mineralizable P multiply by 2.3 to convert to P2o5).

Graph Legend

optimal

outside of optimal range

Submitted for

SOIL HEALTH ASSESSMENT

SAMPLE ID: GRN10

		0 - 9	10 - 29	30 - 50
Soil Health Score	17.4			
		0 - 60	61 - 150	151 - 300
Solvita CO2 Respiration ppm	47.9			
		0 - 7	8 - 19	20 - 30
C:N Ratio	4			
		0 - 149	150 - 300	301 - 400
Total Carbon ppm	120.4			
		0 - 24	25 - 60	61 - 100
Total Nitrogen ppm	32.6			
		0 - 4	5 - 100	101 - 150
Mineralizable N ppm	44.1			
		0 - 2	3 - 35	36 - 60
Mineralizable P ppm	12.7			

Soil Health Score
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Total Carbon
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