Ana-Lync
Fairways & Sports Fields

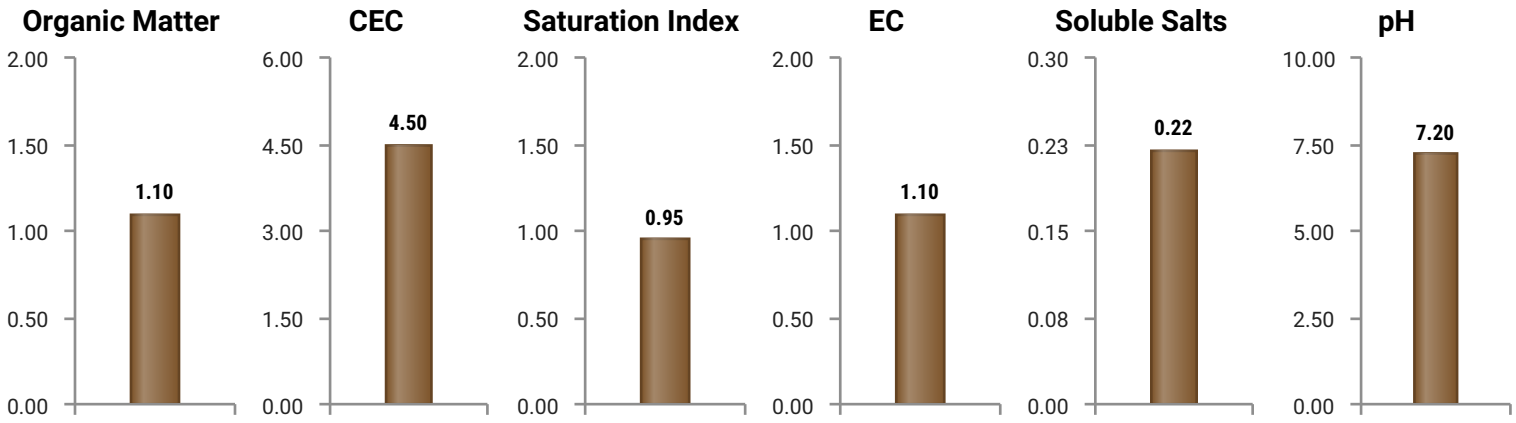
Physicality & Cations

Testing Performed by AgSource Laboratories, Lincoln, Nebraska

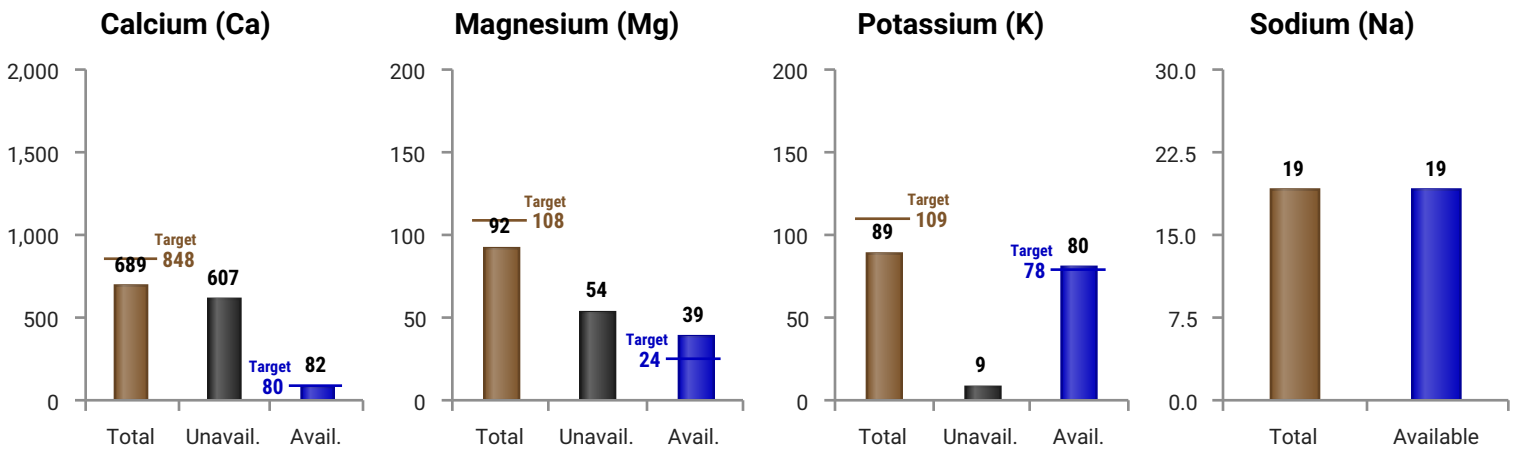
Distributor: GE Turf Consultants/S Fifer
Client: CAMDEN YARDS
MD 21201

Date: 9/12/2025
Info Sheet No.: 582462
Sample IDs: INFLD OUTFD SIDEL
Lab IDs: DF78005-DF78007

Physicality



Base Cations (ppm)



Bulk Rec.: 509 lb/acre

Bulk Rec.: 0 lb/acre

Bulk Rec.: 41 lb/acre

Cation Percentages Vs. Amount of Nutrients

	Nutrient	Perc.	Analysis	Target Range %	Total	Required	Analysis	Bulk Rec.
Total	Ca	76.3%	High	67.0 - 70.0	689.0	848.0	Deficient	509 lb/acre
	Mg	16.9%	High	13.8 - 14.9	92.0	108.0	Deficient	0 lb/acre
	K	5.0%	Low	5.6 - 6.2	88.7	109.0	Deficient	41 lb/acre
	Na	1.8%	Not Problematic	2.9 - 3.5				
	H	0.0%	Low	7.0 - 9.0				
Available	Ca	40.0%	Optimal	39.3 - 40.3	82.3	80.2	Optimal	
	Mg	30.9%	High	17.5 - 18.9	38.5	24.3	Excessive	
	K	20.0%	High	13.0 - 14.5	80.2	78.2	Excessive	
	Na	8.0%	Not Problematic	17.0 - 20.5				
	NH_4	1.1%	Low	10.0 - 12.5				

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Anions, Nitrogen, & Micronutrients

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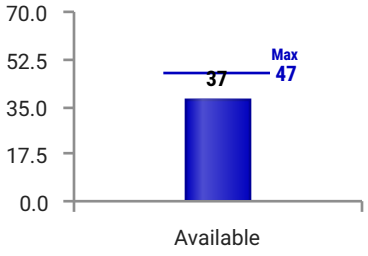
Nitrogen (ppm)

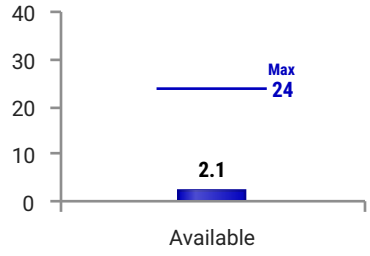
Nitrate (NO_3)

1.7 lb / 1000 sq ft



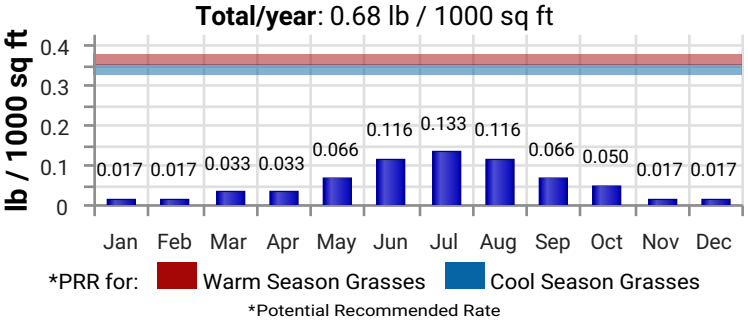
Ammonium (NH_4)

0.097 lb / 1000 sq ft



Estimated Nitrogen Release

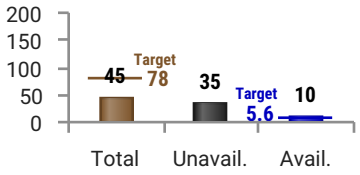
Total/year: 0.68 lb / 1000 sq ft



*Potential Recommended Rate

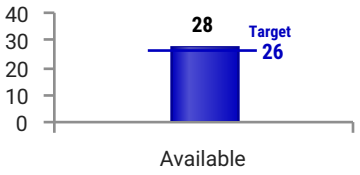
Anions (ppm)

Phosphorus (P)

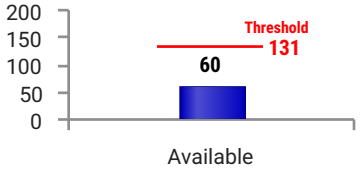


Bulk Rec.: 153 lb/acre

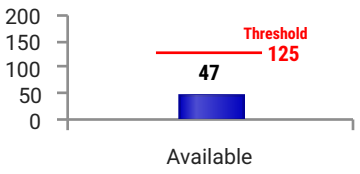
Sulfur (S)



Chloride (Cl)

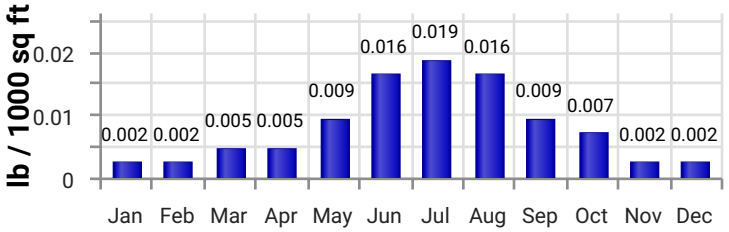


Bicarbonate (HCO_3)



Estimated Phosphorus Release

Total/year: 0.10 lb / 1000 sq ft

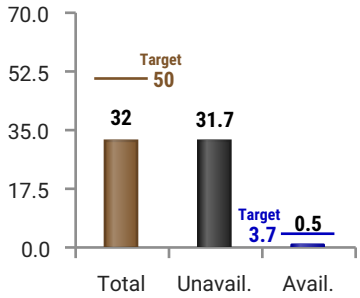


Available Anion Percentages

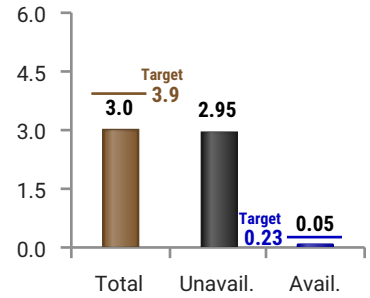
Nutrient	Perc.	Analysis	Target Range %
NO_3	25.1%	Optimal	23 - 28
PO_4	9.4%	High	4 - 7
SO_4	42.0%	High	31 - 35
Cl	16.1%	Low	22 - 24
HCO_3	7.3%	Low	15 - 19

Micronutrients (ppm)

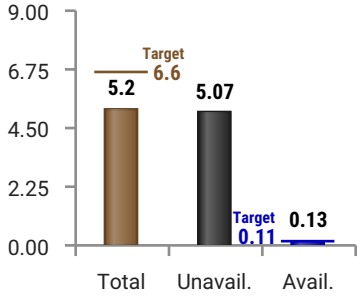
Iron (Fe)



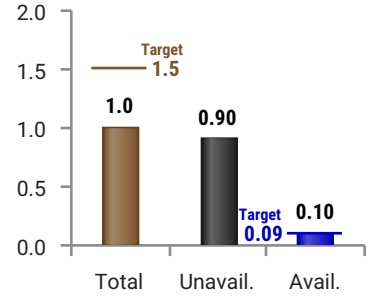
Manganese (Mn)



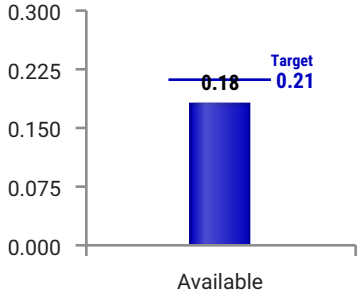
Zinc (Zn)



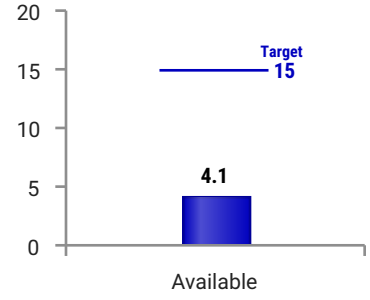
Copper (Cu)



Boron (B)



Silicon (Si)



Ana-Lync
Fairways & Sports Fields

Testing Procedures & Bulk Rec.

Testing Performed by AgSource Laboratories, Lincoln, Nebraska

Distributor: GE Turf Consultants/S Fifer
Client: CAMDEN YARDS
MD 21201

Date: 9/12/2025
Info Sheet No.: 582462
Sample IDs: INFLD OUTFD SIDEL
Lab IDs: DF78005-DF78007

Testing Procedures

Nitrate: Saturated Paste Extract
Ammonium: KCL Extract
Available Nutrients: Saturated Paste Extract
Exchangeable Cations: Ammonium Acetate
Exchangeable Trace Nutrients: DTPA
Phosphorus: pH > 7.2: Olsen, **pH ≤ 7.2:** Bray 1
Sulfur: Monocalcium Phosphate
pH: 1:1 Soil:Water slurry
Boron: DTPA / Sorbitol
Organic Matter: LOI (Loss on Ignition)
Silicon: Saturated Paste Extract
Saturation Index: Saturated Paste Extract
EPR / ENR: Proprietary
***AgSource Laboratories is an N.A.P.T./PAP certified lab**

Bulk Recommendations

Units: lb/acre

Ca	Mg	K_2O	P_2O_5
509	0	41	153

This is the quantity required to achieve balance and overcome nutrient tie-ups. The amount required may not be economically or agronomically feasible in a short time period.

Per Source:

$CaCO_3$	Dolomite	0-0-50
1591	0	82

Per Sample:

	Ca	Mg	K_2O	P_2O_5
INFLD	527	0	30	225
OUTFD	469	0	24	0
SIDEL	531	0	68	248

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Nutrient Data

Testing Performed by AgSource Laboratories, Lincoln, Nebraska

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Date: 9/12/2025
Info Sheet No.: 582462
Sample IDs: INFLD OUTFD SIDEL
Lab IDs: DF78005-DF78007

Laboratory Number		DF78005	DF78006	DF78007	Avg.	Target / Threshold
Client ID		INFLD	OUTFD	SIDEL		
Organic Matter %		1	1.2	1.1	**1.1**	
Saturation Index		0.94	1.0	0.88	**0.95**	
pH		7.2	7.0	7.3	**7.2**	
Soluble Salts		0.2	0.28	0.18	**0.22**	
Electrical Conductivity		1.2	1.2	0.87	**1.1**	
ExcessCarbonates		VL	VL	VL		
Calcium (Ca)	TOTAL PPM	688	715	665	**689**	848
	AVAILABLE PPM	90.0	87.8	69.1	**82.3**	80.2
Magnesium (Mg)	TOTAL PPM	84.0	107	85.0	**92.0**	108
	AVAILABLE PPM	40.8	46.1	28.7	**38.5**	24.3
Potassium (K)	TOTAL PPM	94.0	97.0	75.0	**88.7**	109
	AVAILABLE PPM	94.0	89.5	57.1	**80.2**	78.2
Sodium (Na)	TOTAL PPM	19.0	21.0	17.0	**19.0**	
	AVAILABLE PPM	19.0	21.0	17.0	**19.0**	
Cation Ratios	Ca:Mg	8.2	6.7	7.8	**7.5**	
	Mg:K	0.9	1.1	1.1	**1.0**	
	Ca:Na	36.2	34.0	39.1	**36.3**	
	K:Na	4.9	4.6	4.4	**4.7**	
Cation Exchange Capacity		4.5	4.8	4.3	**4.5**	
Percent Base	Ca %	77.0	74.5	77.4	**76.3**	67-70
Saturations	Mg %	15.7	18.5	16.5	**16.9**	13.8-14.8
	K %	5.4	5.2	4.5	**5.0**	5.6-6.2
	Na %	1.9	1.9	1.7	**1.8**	2.9-3.5
	H %	0	0	0	**0**	7-9
Phosphorus (P)	TOTAL PPM	29.0	81.0	24.0	**44.7**	78.0
(Bray 1)	AVAILABLE PPM	13.5	11.2	5.9	**10.2**	5.6
EPR	LB / 1000 SQ FT	0.088	0.1	0.096	**0.096**	
Sulfur (S)	AVAILABLE PPM	30.0	29.6	23.3	**27.7**	25.7
Chloride (Cl)	AVAILABLE PPM	68.8	65.2	46.1	**60.0**	131
Bicarbonate (HCO_3)	AVAILABLE PPM	48.2	42.1	50.6	**47.0**	125
Nitrate (NO_3)	AVAILABLE PPM	38.0	49.6	23.4	**37.0**	37.8
Ammonium (NH_4)	AVAILABLE PPM	2.5	2.2	1.6	**2.1**	20.7
ENR	LB / 1000 SQ FT	0.62	0.74	0.68	**0.68**	
Iron (Fe)	TOTAL PPM	27.6	29.7	39.3	**32.2**	50.0
	AVAILABLE PPM	0.67	0.39	0.57	**0.54**	3.7
Manganese (Mn)	TOTAL PPM	1.6	5.7	1.7	**3.0**	3.9
	AVAILABLE PPM	0.06	0.05	0.04	**0.05**	0.23
Zinc (Zn)	TOTAL PPM	4.5	5.7	5.5	**5.2**	6.6
	AVAILABLE PPM	0.15	0.13	0.11	**0.13**	0.11
Copper (Cu)	TOTAL PPM	1	1.1	1	**1.0**	1.5
	AVAILABLE PPM	0.11	0.08	0.1	**0.097**	0.093
Boron (B)	AVAILABLE PPM	0.19	0.18	0.16	**0.18**	0.21
Silicon (Si)	AVAILABLE PPM	4.8	3.5	3.9	**4.1**	14.8

Testing Performed by AgSource Laboratories, Lincoln, Nebraska

Organic Matter
Sand
Value: 1.1
Evaluation: Low

OM is low indicating a soil type that is somewhat porous and has less than optimum microbial activity. Percolation rates may be high and water holding capacity may be low. Leaching of nutrients is likely.

Humic soil amendments are recommended to increase exchange sites and provide microbial food sources.

Organic Matter
Pushup
Value: 1.1
Evaluation: Deficient

OM is very low indicating a soil type that is very porous and may have low microbial activity. Expect high percolation rates, low capillary water, and high leaching of nutrients. Maintain appropriate nutrient levels throughout the growth cycle.

Humic soil amendments are recommended to increase exchange sites and provide microbial food sources.

Saturation Index
Sand
Value: 0.95
Evaluation: High

The Saturation Index is indicating a soil type that may be subject to compaction or is high in clay or organic content. Reduced air and water movement may be likely. Pay attention to root development.

Bulk calcium and/or organic soil amendments can improve soil physical characteristics.

Saturation Index
Pushup
Value: 0.95
Evaluation: Deficient

The Saturation Index is very low indicating a soil type that is very porous. Expect excessive percolation rates, low capillary water, and high leaching of nutrients. Maintain appropriate nutrient levels.

A low saturation index usually indicates a sandy soil with low organic matter content. Such soils are poor in water holding capacity.

Organic soil amendments can help the biological function of the soil and improve soil physical characteristics.

Electrical Conductivity
Sand
Value: 1.1
Evaluation: High

EC readings are high and may indicate a build-up of Na and Cl. These levels may interfere with K and NO_3 uptake during heat and drought conditions. Root length and depth may be reduced.

Turf may require more water to maintain adequate transpiration rates. The plants may tend to show more stress under warm weather conditions.

Bulk calcium amendments and flushing will be helpful in reducing sodium and related salts.

Electrical Conductivity
Pushup
Value: 1.1
Evaluation: High

EC readings are high and may indicate a build-up of Na and Cl. These levels may interfere with K and NO_3 uptake during heat and drought conditions. Root length and depth may be reduced.

Turf may require more water to maintain adequate transpiration rates. The plants may tend to show more stress under warm weather conditions.

Bulk calcium amendments and flushing will be helpful in reducing sodium and related salts.

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Available Ammonium

Value: 2.1 ppm
Evaluation: Deficient

Levels this low may indicate an overall lack of N. A lack of NH_4 in the soil may also induce an unhealthy uptake of Na and K. Chlorophyll formation may not be adequate.

Check NO_3 levels.

Application of an ammonium-based fertilizer may be required.

Available Nitrate

Value: 37.0 ppm
Evaluation: Optimal

NO_3 levels are ideal for production of amino acids and key biostimulants.

Application of additional nitrate sources may not be needed.

Available Calcium

Value: 82.3 ppm
Evaluation: Optimal

Ca levels are sufficient to maintain cellular strength and integrity, promote root growth, optimize membrane function, and minimize effects from salt stress. Expect better resistance to heat and drought stress.

Additional inputs of Ca amendments may not be needed.

Total Calcium

Value: 689 ppm
Evaluation: Deficient

Soil structure may degrade and water penetration may be poor. Bulk calcium soil amendments are recommended. See page 1 and 3 of the report for bulk calcium recommendations.

The ammonium acetate soil test reports this to be deficient; however, this may not be an accurate reflection of what is available to the plant. Refer to the Available Ca portion of the report for more details regarding Ca inputs.

Available Magnesium

Value: 38.5 ppm
Evaluation: Excessive

Available Mg is excessive. It may have an impact on chlorophyll production. Potential interference with the uptake of Ca, Fe, and K is possible.

A reduction or stoppage of magnesium may be warranted until current levels subside. Use soil / tissue analysis to determine needs.

Total Magnesium

Value: 92.0 ppm
Evaluation: Deficient

The traditional soil test reports this to be deficient; however, this may not be an accurate reflection of what is available to the plant. Refer to Available Mg for more details.

The application of a bulk magnesium soil amendment is usually required. See page 1 and 3 of the report for recommendations.

Available Potassium

Value: 80.2 ppm
Evaluation: Excessive

K levels are excessive and may interfere with Ca and Mg uptake. Plants may suffer more symptoms of heat or drought stress under hot and dry conditions.

A reduction or stoppage of potassium may be warranted until current levels subside. Use subsequent soil / tissue analysis to determine needs.

Total Potassium

Value: 88.7 ppm
Evaluation: Deficient

The ammonium acetate (total K) soil test reports this amount to be deficient; however, this may not be an accurate reflection of what is available to the plant. Refer to Available K for more details.

Bulk potassium sources are recommended. See page 1 and 3 of this report for recommendations.

Available Sodium

Value: 19.0 ppm
Evaluation: Not Problematic

Soluble Na is deficient; however, minimal interference with plant function may occur. The key role of Na in the plant is to move CO_2 within the cell, but other nutrients can be substituted, namely potassium (K).

Additional inputs of sodium amendments are not typically recommended. Applications of potassium fertilizers are indicated, especially if available K is low.

Total Sodium

Value: 19.0 ppm
Evaluation: Not Problematic

The traditional soil test reports this to be deficient; however, this may not be an accurate reflection of what is available to the plant. Refer to the Available Na portion for more details.

Sodium inputs are not typically recommended.

Available Phosphorus

Value: 10.2 ppm
Evaluation: Excessive

P levels are excessive and may interfere with the uptake of key micronutrients such as zinc, manganese, and iron.

Symptoms of chlorosis may appear due to phosphorus tying up zinc, iron, and manganese.

A reduction or stoppage of all phosphorus applications may be warranted until levels subside. Use subsequent soil / tissue analysis to determine future needs.

Total Phosphorus

Value: 44.7 ppm
Evaluation: Deficient

The traditional phosphorus test would indicate that P levels are deficient; however, this may not be a reliable indicator of what is available to plants. Refer to Available P for more details.

Available Chloride

Value: 60.0 ppm
Evaluation: Within Allowable Limits

Soluble Cl is deficient and interference with plant function is possible. Proper movement of oxygen in the photosynthetic process may be minimized and optimum stomata operation may be slightly compromised.

Available Bicarbonate

Value: 47.0 ppm
Evaluation: Within Allowable Limits

Low levels of Bicarbonates indicate that soil pH will be weakly buffered due to their absence.

Available Sulfur

Value: 27.7 ppm
Evaluation: Optimal

SO_4 levels are optimum to produce key amino acids.

Additional inputs of sulfate fertilizers may not be needed except in sandy soils.

Available Boron

Value: 0.18 ppm
Evaluation: Low

Available boron may not be adequate for optimal plant function. Nitrate reductase can be interrupted.

On sandy soils, boron is subject to leaching.

Available Silicon

Value: 4.1 ppm
Evaluation: Deficient

With deficient silicon, weaker cell walls are possible.

Additional inputs of silicon may be recommended.

Comments

Testing Performed by AgSource Laboratories, Lincoln, Nebraska

Available Zinc

Value: 0.13 ppm
Evaluation: Excessive

Zinc levels are excessive, so root development may be slowed. Chlorosis is a possibility if Fe and Mg uptake is interrupted.

Excessive levels may cause sluggish growth in the spring due to tie-ups of phosphorus.

Consider a reduction or stoppage of zinc inputs until levels subside.

Total Zinc

Value: 5.2 ppm
Evaluation: Deficient

The soil test reports zinc to be deficient; however, this may not be an accurate reflection of what is available to the plant. Refer to Available Zn for more details.

Available Manganese

Value: 0.05 ppm
Evaluation: Deficient

Mn availability in the soil is deficient and chlorophyll formation and photosynthesis may be diminished. Enzyme function and pathogen resistance may be low.

Mn deficient plants exhibit an interveinal chlorosis between veins on the younger leaves. Symptoms resemble iron deficiency.

Total Manganese

Value: 3.0 ppm
Evaluation: Deficient

The traditional soil test reports this to be deficient; however, this may not be an accurate reflection of what is available to the plant. Refer to Available Mn for more details.

Available Copper

Value: 0.097 ppm
Evaluation: Optimal

Available copper is optimum for proper chlorophyll production, enzymatic activity, and protein synthesis. Plant response to pathogens should be good. Metabolism of carbohydrates and nitrogen should be optimal.

Additional inputs of copper may not be needed.

Total Copper

Value: 1.0 ppm
Evaluation: Deficient

The traditional soil test reports this to be deficient; however, this may not be an accurate reflection of what is available to the plant. Refer to Available Cu for more details.

Available Iron

Value: 0.54 ppm
Evaluation: Deficient

Levels of available iron may not be sufficient to support essential plant functions, including chlorophyll formation and electron transfer. Interveinal chlorosis and poor root development are possible. Symptoms will be more severe if high bicarbonates are also present.

Iron-deficient leaves show intense chlorosis. The most common symptom for iron deficiency starts out as an interveinal chlorosis of the youngest leaves but can evolve into an overall chlorosis with only some of the veins remaining green. Symptoms are rarely uniform throughout the turf and may be worse in areas without good soil aeration.

Iron deficiency is strongly associated with calcareous soils and/or anaerobic soil conditions. Symptoms are intensified by high bicarbonate levels.

Total Iron

Value: 32.2 ppm
Evaluation: Deficient

The traditional soil test reports this to be deficient; however, this may not be an accurate reflection of what is available to the plant. Refer to Available Fe for more details.

Alternating foliar and soil applications of Iron may be recommended for correction of symptoms.