



Client: CanyonGate Country Club

Fall 2023 Report

	<u>9/20/21</u>	<u>9/12/22</u>	<u>9/14/23</u>
Humidity/Air Temperature	10%/86°	59%/83°	40%/85°
Greens Temperature	(avg)60.3°	(avg)78.3°	(avg)66.45°
Fairway Temperature	(avg)64.05°	(avg)76.9°	(avg)71.5°

WATER	Acceptable Range For Water Sample	Hole #2 9/20/21	Pond 9/12/22	Pond 9/14/23
pH	6.0-6.5	8.26	7.74	7.53
EC	<2.25 mmhos/cm	0.58	0.60	0.61
Sodium		20.42	16.22	13.79
Calcium	20 - 60 ppm	54.18	58.42	65.84
Magnesium	10 - 25 ppm	29.35	30.00	31.23
Potassium	5 - 20 ppm	2.58	1.75	2.08
Nitrate	10 - 25 ppm	n/r	1.78	2.40
Phosphorus	5 - 20 ppm	n/r	0.25	<0.20
Sulfur	30 - 90 ppm	88.53	81.54	95.49
Bicarbonate	<120 ppm	210.22	221.17	239.25
Boron	<0.67 ppm	<0.05	0.06	<0.05
Chloride	<177 ppm	36.59	32.51	35.74



SOIL AND WATER CONSULTING

TEE	Acceptable Range For Tissue Sample	17 9/14/23
Nitrogen	3.34%-5.10%	
Phosphorus	0.35% - 0.55%	
Potassium	2.0% - 3.42%	
Calcium	0.25%-0.5%	
Magnesium	0.16%-0.32%	
Sodium	229-1107 ppm	

FAIRWAY	Acceptable Range For Tissue Sample	17 9/14/23
Nitrogen	3.34%-5.10%	
Phosphorus	0.35% - 0.55%	
Potassium	2.0% - 3.42%	
Calcium	0.25%-0.5%	
Magnesium	0.16%-0.32%	
Sodium	229-1107 ppm	

GREENS	Acceptable Range For Tissue Sample	8,17(avg) 9/14/23
Nitrogen	3.0%-6.5%	0.00
Phosphorus	0.2%-0.55%	0.00
Potassium	0.86%-2.55%	0.00
Calcium	0.21%-0.50%	0.00
Magnesium	0.09%-0.22%	0.00
Sodium	506- 2264 ppm	0.00

TEES	Acceptable Range For Alkaline Soils Sample	8,17(avg) 10/16/20	8,17(avg) 9/14/23
Organic Matter (Humus)	2 - 3%	1.95	3.82
Sulfur	12 - 16 ppm	20.50	182.00
Olsen - Phosphorus	13 - 20 ppm	12.50	27.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	1,980.00	3,781.00
Magnesium	>7% base saturation or at least 200 lbs/acre	22.33%/886	21.35%/695
Potassium - TEC of 0 - 35	100 ppm	292.00	208.00
Manganese	>50 ppm	20.00	19.50

FAIRWAYS	Acceptable Range For Alkaline Soils Sample	8,17(avg) 10/16/20	8,17(avg) 9/14/23
Organic Matter (Humus)	2 - 3%	3.04	4.76
Sulfur	12 - 16 ppm	39.00	37.00
Olsen - Phosphorus	13 - 20 ppm	36.00	59.50
Calcium - TEC of 6 - 12	1,000 lbs/acre	2,706.00	4,151.00
Magnesium	>7% base saturation or at least 200 lbs/acre	21.69%/1,035	22.34%/804
Potassium - TEC of 0 - 35	100 ppm	312.50	180.50
Manganese	>50 ppm	16.50	15.50

GREENS	Acceptable Range For Alkaline Soils Sample	8,17(avg) 10/16/20	8,17(avg) 9/14/23
Organic Matter (Humus)	2 - 3%	0.49	0.52
Sulfur	12 - 16 ppm	16.00	22.50
Olsen - Phosphorus	13 - 20 ppm	3.50	3.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	1,751.00	1,545.00
Magnesium	>7% base saturation or at least 200 lbs/acre	16.59%/228	15.72%/189
Potassium - TEC of 0 - 35	150 ppm	59.00	51.50
Manganese	>50 ppm	32.50	30.00

TEES	Acceptable Range For Saturated Paste Sample	8 10/16/20	17 9/14/23
Nitrate - Ryegrass	5-10 ppm	70.50	9.10
Phosphorus	2 - 10 ppm	3.63	7.09
Potassium	40 - 100 ppm	21.16	29.78
Calcium	60 - 200 ppm	109.60	71.41
Magnesium	20 - 70 ppm	50.85	34.74
Sodium	0 - 30 ppm	45.80	25.38
Soluble Salts	<1,920 ppm	723.00	440.00
Bicarbonate	<60 ppm	89.09	218.06
Chloride	<1,000 ppm	65.00	31.00
SAR	<4%	0.91	0.62

FAIRWAYS	Acceptable Range For Saturated Paste Sample	8 10/16/20	17 9/14/23
Nitrate - Ryegrass	5-10 ppm	105.10	<0.5
Phosphorus	2 - 10 ppm	3.46	2.67
Potassium	40 - 100 ppm	52.51	24.01
Calcium	60 - 200 ppm	150.75	74.72
Magnesium	20 - 70 ppm	59.19	36.39
Sodium	0 - 30 ppm	36.84	33.42
Soluble Salts	<1,920 ppm	980.00	460.00
Bicarbonate	<60 ppm	103.06	233.91
Chloride	<1,000 ppm	57.00	37.00
SAR	<4%	0.64	0.79

GREENS	Acceptable Range For Saturated Paste Sample	8,17(avg) 10/16/20	8,17(avg) 9/14/23
rate - Dominator Bentgrass	1-3 ppm	<0.65	1.25
Phosphorus	2 - 7 ppm	2.14	2.68
Potassium	25-40 ppm	27.48	18.75
Calcium	50- 75 ppm	62.99	39.21
Magnesium	15-30 ppm	27.35	16.21
Sodium	0 - 30 ppm	24.24	13.80
Soluble Salts	<1,000 ppm	433.50	258.00
Bicarbonate	<60 ppm	86.90	87.30
Chloride	<200 ppm	26.50	15.50

Nutrient Deficiencies

		P	K	Mn
TEE	8	16	292	21
TEE	17	38	124	18
FAIRWAY	8	47	181	11
FAIRWAY	17	72	180	20
GREEN	8	2	49	33
GREEN	17	4	54	27

Phosphorus can be added in the form of 11-55-00 at a rate of 125 pounds of product per acre.

Potassium can be added in the form of 0-0-50 at a rate of 2 pounds of product per 1,000 sq ft two times in the next three months.

Manganese can be added in the form of Manganese Oxide or Sulfate at a rate of 3 pounds of product per 1,000 sq ft in October, November and December.

Comments and Next Level Cultural Practices

- Organic material and sulfur have increased on tees and OM increased on fairways compared to 2020 on the same holes. It makes sense on tees in that as a layer gets deeper, drainage will often decrease. More core aerification on the bermudagrass will help
- On the tees and fairways, the Calcium has increased by nearly double
- The greens were very consistent in their chemistry which makes it easier to maintain. I would feel comfortable in treating them all the same for these applications.
- The new irrigation system and turf reduction scheduled for this Winter, is a lot of what Canyon Gate Country Club has needed for the years I have worked there! Over time, the new system and aerification will change the “hard” pockets of soil that have developed due to poor irrigation coverage.

