



TOWN OF COLCHESTER
Recreation Complex

TO: Cheryl Hancin
Recreation Manager
Colchester Parks and Recreation
127 Norwich Avenue
Colchester, CT 06415

FROM: Jason Henderson and Julie Campbell
Department of Plant Science
and Landscape Architecture
University of Connecticut
1390 Storrs Road, Unit 4163
Storrs, CT 06269

Per your request, this report is summary of soil test results and observations made during a visit to the Recreation Complex on August 12, 2014. Cheryl Hancin, Tim Angell, Jim Paggioli and Eric Kundahl were present. Officials representing the Town of Colchester expressed serious concerns regarding the lack of turfgrass cover, overall weed pressure and poor playing conditions. Three athletic fields (R2, R7, and R8) were evaluated.

All three fields had minimal turfgrass cover in high traffic areas or were dormant due to moisture stress. The fields had high surface irregularities creating inconsistent playing surfaces (Figure 1). Several subsamples were extracted to a 4" depth from each field for particle size analyses, percent organic matter determination and nutrient analyses. Results indicate that the soil from each field would be classified as a sandy loam according to the U.S. Department of Agriculture classification system. Organic matter content is another indication of soil quality. Generally, an organic matter content of 4-6% by weight would be considered ideal for native soils used to construct high quality turfgrass areas. The organic matter content was adequate on all three fields (Table 1).

Results from nutrient analyses indicate that the calcium, magnesium, phosphorus and potassium levels were within or above optimum ranges for turfgrasses on all three fields (Table 2). The pH was within the optimum range on all three fields (Table 1). Complete soil test results are attached.

Several factors likely contributed to the condition of these athletic fields. However, the primary causes can be linked to; 1) the lack of irrigation, 2) malfunctioning of existing irrigation, 3) no routine core cultivation, 4) minimal overseeding, and 5) the inability to control weeds. Effective July 1, 2010, the state of Connecticut banned the usage of all lawn care pesticides on athletic fields at public and private schools grades pre-K through 8. Therefore, conventional methods of controlling weeds, diseases and insects are not an option. However, while not totally eliminating pest problems, the use of best management practices such as proper turfgrass species/cultivar selection, aggressive overseeding, entomopathogenic nematodes, and proper irrigation can help mitigate pest pressure. The current condition of the athletic fields (R2, R7, and R8) will be detailed below including suggestions regarding improvement.



Figure 1. The majority of playing surfaces on all three fields were dormant due to moisture stress; a) R2 and b) R7. Highly trafficked portions of the fields had very low turfgrass cover and uneven playing surfaces, which are significant safety concerns.

Table 1. Particle size analyses, pH and organic matter contents from Colchester Recreation Complex, August 12, 2014.

Sample	Soil Separate %			Textural Class/pH/Organic Matter		
	Sand	Silt	Clay	Textural Class	pH	Organic Matter %
R2	69.4	23.8	6.8	Sandy Loam	6.0	5.0
R7	69.4	24.8	5.8	Sandy Loam	6.6	5.2
R8	57.2	34.6	8.2	Sandy Loam	6.4	5.3

Table 2. Soil nutrient analyses results from Colchester Recreation Complex athletic fields, August 12, 2014.

Sample	Calcium ¹ (lbs/acre)	Magnesium (lbs/acre)	Phosphorus (lbs/acre)	Potassium (lbs/acre)
R2	2451	456	11	426
R7	>4000	487	47	373
R8	3109	406	18	370
Optimum Range	1800-2400	175-250	6-20	100-350

1 Modified Morgan Extractable

Turfgrass management includes five primary cultural practices; 1) **mowing**, 2) **fertilization**, 3) **cultivation**, 4) **pest control**, 5) **irrigation**. Athletic fields present a different challenge compared to other turfgrass areas due the nature of the traffic they endure and the liability associated with their use. It is imperative that these cultural practices are implemented properly. The recent pesticide legislation makes it more difficult to maintain these areas, but it is not the primary cause of the poor playing conditions observed.

The athletic fields (R2, R7, and R8) have been constructed with quality topsoil (Table 1) and the nutrient contents have been maintained at optimum or above optimum levels (Table 2). Nitrogen is not included in routine soil tests; however these fields should be receiving 3-4 lbs N 1000ft⁻². An example fertility program is detailed in Table 3.

The greatest opportunity for improving these athletic fields involves implementing the other four cultural practices effectively (mowing, cultivation, pest control and irrigation). Please refer to “*Best Management Practices for Managing Pesticide-Free Cool-Season Athletic Fields*” for details on alternative methods for maintaining athletic fields without pesticides. This document provides research-based recommendations for managing playing surfaces where pesticides are not an option (available for free download at www.turf.uconn.edu). An example management plan is detailed below including a fertility program in Table 3. Areas of concern are detailed on page 4.

Management Plan 2015

- Week of April 27
 - Cultivate using a PTO driven core cultivation unit (hollow core 5/8” tines, 2’X 2” spacing) two directions
 - Drag in two directions using a heavy drag mat
 - Seed Kentucky bluegrass/Perennial ryegrass mixture (70:30), using a Brillion seeder or a spike seeder to maximize seed to soil contact, in two directions at a rate of 2 lbs 1000ft⁻² (4 lbs 1000ft⁻² total)
 - Apply starter fertilizer (13-25-12) at 0.5 lbs N 1000ft⁻²
 - Consider hydromulching areas that have no existing turfgrass cover
 - Irrigate light and frequently to encourage germination and subsequent development
- Week of May 25
 - Apply poly coated fertilizer (31-0-10) at 1.5 lbs N 1000ft⁻²
- Week of August 24
 - Apply poly coated fertilizer (31-0-10) at 1.5 lbs N 1000ft⁻²
- Week of August 31
 - Overseed at 20 lbs 1000ft⁻² using a perennial ryegrass blend in high trafficked portions of each field only
- Week of October 19
 - Apply Urea (46-0-0) at 0.5 lb N 1000ft⁻²

Table 3. Suggested Turfgrass Establishment Fertilizer Program, 2015.

Suggested Date of Application	Fertilizer	lbs. Fert/1000ft ²	Weight of Nutrient Applied (lbs)		
			N	P ₂ O ₅	K ₂ O
Week of April 27 (Seeding date)	13-25-12 [†]	4.0	0.5	1.0	0.5
Week of May 25	30-0-10 [‡]	5.0	1.5	0.0	0.5
Week of August 24	30-0-10	5.0	1.5	0.0	0.5
Totals			3.5	1.0	1.5

[†] 13-25-12, Starter Fertilizer

[‡] 30-0-10, 75% Controlled slow release N from poly-coated urea

Areas of Concern

Many of the playing surfaces at the Recreation Complex are not safe for use due to the lack of routine athletic field management practices such as filling divots/holes, core cultivation, overseeding, and irrigation. Improving athletic field quality at the Recreation Complex involves increasing resources in two primary areas; infrastructure (equipment/supplies/irrigation) and human resources. The current condition of the athletic fields is likely a combination of insufficient quantities of both types of critical resources. Suggestions for improvement include the following; 1) provide your crew leader with the resources to hire a Sports Turf Manager to manage all playing surfaces. The additional skilled personnel can focus 100% of their time on the athletic fields, 2) provide resources to acquire proper equipment to enable more efficient use of labor, and 3) provide professional development opportunities for existing staff.

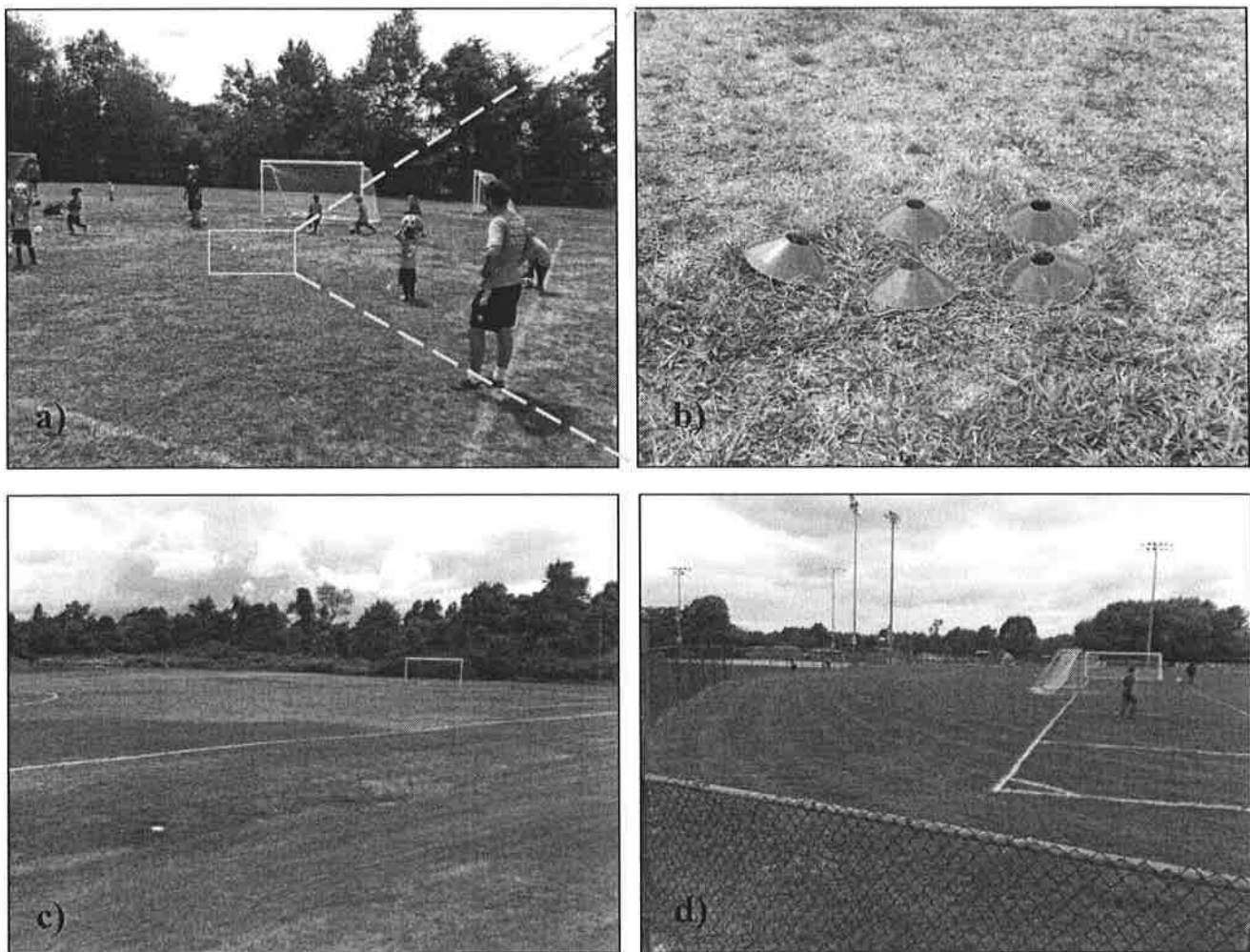


Figure 2. Areas of concern; a) and b) Surface depressions/holes/irregularities on playing surfaces are significant safety concerns and could result in very serious surface related injuries c) Irrigation systems are not being properly maintained resulting in uneven coverage and drastically different turfgrass quality in relatively small areas, d) Using damaged or poorly maintained mowers are resulting in scalping over large areas. The Sports Turf Managers Association (STMA) publishes sport specific safety checklists (an example is attached).



University of Connecticut

Department of Plant Science

Soil Nutrient Analysis Laboratory, 6 Sherman Place, Box U-102, Storrs, CT 06269-5102,
Phone : 860-486-4274, Fax : 860-486-4562.

GROWER'S ADDRESS		SAMPLE ID	
COLCHESTER PARKS & REC 127 NORWICH AVE COLCHESTER, CT 06415		R2	
LAB ID	RECEIVED	REPORTED	
6361	08/19/14	08/25/14	
SALES AGENT			

NUTRIENTS EXTRACTED FROM YOUR SOIL (MODIFIED MORGAN EXTRACTABLE)

		BELOW OPTIMUM	OPTIMUM	ABOVE OPTIMUM
pH	6.0			
Calcium	2451 lbs/acre	*****	*****	
Magnesium	456 lbs/acre	*****	*****	*****
Phosphorus	11 lbs/acre	*****	***	
Potassium	426 lbs/acre	*****	*****	*****

Element	ppm	Soil Range
Boron (B)	0.20	0.1-2.0
Copper (Cu)	0.20	0.3-8.0
Iron (Fe)	4.40	1.0-40.0
Manganese (Mn)	3.80	3.0-20.0
Zinc (Zn)	0.80	0.1-70.0
Aluminum (Al)	41	10-300

Estimated Total Lead: Low, typical background levels

LIME AND FERTILIZER RECOMMENDATIONS

CROP OR PLANT : ESTABLISHED LAWN

LIMESTONE (GROUND, GRANULAR, PULVERIZED OR PELLETTED):

Apply 50 lbs. per 1000 sq. ft. to raise the pH level. Have your soil re-tested in 3-4 years.

FERTILIZER:

Phosphorus and Potassium levels are adequate. Therefore, follow the recommendations for maintenance fertilizers shown on the enclosed sheet. Use a lawn fertilizer, such as 10-6-4, 19-4-4, 28-3-8 or 30-4-4.

COMMENTS:

Soil texture classification: Sandy loam

Organic content classification: Medium

CROP OR PLANT : NEW LAWN, SEEDING OR SODDING

LIMESTONE (GROUND, GRANULAR, PULVERIZED OR PELLETTED):

Apply 50 lbs. per 1000 sq. ft. to raise the pH level. Have your soil re-tested in 3-4 years.

FERTILIZER:

After final grading, if seeding, apply 20 lbs of 5-10-5 or 10 lbs of 10-20-10 per 1000 sq ft. Scratch into the soil surface with the seed. If sodding, apply to the soil surface 10 lbs of 10-10-10 per 1000 sq ft after final grading before sod placement. Once the lawn begins to grow, follow the recommendations for maintenance fertilizers shown on the enclosed sheet.

COMMENTS:

Soil texture classification: Sandy loam

Organic content classification: Medium

If you have questions about this report or about any other plant or soil problem, contact the University of Connecticut Home & Garden Education Center, Department of Plant Science, U-115, Storrs, CT 06269-4115. Phone: (877) 486 6271 (toll-free).



University of Connecticut
College of Agriculture and Natural Resources

Department of Plant Science
& Landscape Architecture
Soil Nutrient Analysis
Laboratory

RESULTS REPORT

August 25, 2014

Company Name: CHERYL HANCIN
COLCHESTER PARKS & RECREATION
127 NORWICH AVE
COLCHESTER, CT 06415

Lab Number: MA14-162
Sample Name: R2

Textural Analysis

Percentages are Based on the Fine Earth Fraction (Less than 2mm)

Sand:	69.4 %
Silt:	23.8 %
Clay:	6.8 %

According to USDA criteria, this sample classifies as a **SANDY LOAM**. Classification is based on particles that are sand size or finer (i.e. Less than 2 millimeters in diameter.)

Organic Matter

The organic matter as determined by loss on ignition is 5.0 %

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Union Cottage
6 Sherman Place Unit 5102
Storrs, Connecticut 06269-5102 USA
Telephone: (860) 486-4274
Facsimile: (860) 486-4562
web: www.soiltest.uconn.edu



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GROWER'S ADDRESS	SAMPLE ID						
COLCHESTER PARKS & REC 127 NORWICH AVE COLCHESTER, CT 06415	R7						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 33%;">LAB ID</th> <th style="width: 33%;">RECEIVED</th> <th style="width: 33%;">REPORTED</th> </tr> <tr> <td style="text-align: center;">6362</td> <td style="text-align: center;">08/19/14</td> <td style="text-align: center;">08/25/14</td> </tr> </table>	LAB ID	RECEIVED	REPORTED	6362	08/19/14	08/25/14
	LAB ID	RECEIVED	REPORTED				
	6362	08/19/14	08/25/14				
SALES AGENT							

NUTRIENTS EXTRACTED FROM YOUR SOIL (MODIFIED MORGAN EXTRACTABLE)

		BELOW OPTIMUM	OPTIMUM	ABOVE OPTIMUM
pH	6.6			
Calcium	>4000 lbs/acre	*****	*****	*****
Magnesium	487 lbs/acre	*****	*****	*****
Phosphorus	47 lbs/acre	*****	*****	*****
Potassium	373 lbs/acre	*****	*****	*****

Element	ppm	Soil Range
Boron (B)	0.30	0.1-2.0
Copper (Cu)	0.30	0.3-8.0
Iron (Fe)	5.90	1.0-40.0
Manganese (Mn)	3.60	3.0-20.0
Zinc (Zn)	1.40	0.1-70.0
Aluminum (Al)	30	10-300

Estimated Total Lead: Low, typical background levels

LIME AND FERTILIZER RECOMMENDATIONS

CROP OR PLANT: ESTABLISHED LAWN

LIMESTONE:

Apply no limestone.

FERTILIZER:

Phosphorus and Potassium levels are adequate. Therefore, follow the recommendations for maintenance fertilizers shown on the enclosed sheet. Use a lawn fertilizer, such as 10-6-4, 19-4-4, 28-3-8 or 30-4-4.

COMMENTS:

Soil texture classification: Sandy loam

Organic content classification: Medium

CROP OR PLANT: NEW LAWN, SEEDING OR SODDING

LIMESTONE:

Apply no limestone.

FERTILIZER:

After final grading, if seeding, apply 20 lbs of 5-10-5 or 10 lbs of 10-20-10 per 1000 sq ft. Scratch into the soil surface with the seed. If sodding, apply to the soil surface 10 lbs of 10-10-10 per 1000 sq ft after final grading before sod placement. Once the lawn begins to grow, follow the recommendations for maintenance fertilizers shown on the enclosed sheet.

COMMENTS:

Soil texture classification: Sandy loam

Organic content classification: Medium

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Laboratory

RESULTS REPORT

August 25, 2014

Company Name: CHERYL HANCIN
COLCHESTER PARKS & RECREATION
127 NORWICH AVE
COLCHESTER, CT 06415

Lab Number: MA14-163
Sample Name: R7

Textural Analysis

Percentages are Based on the Fine Earth Fraction (Less than 2mm)

Sand:	69.4 %
Silt:	24.8 %
Clay:	5.8 %

According to USDA criteria, this sample classifies as a **SANDY LOAM**. Classification is based on particles that are sand size or finer (i.e. Less than 2 millimeters in diameter.)

Organic Matter

The organic matter as determined by loss on ignition is 5.2%

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GROWER'S ADDRESS	SAMPLE ID
COLCHESTER PARKS & REC 127 NORWICH AVE COLCHESTER, CT 06415	R8
	LAB ID RECEIVED REPORTED
	6363 08/19/14 08/25/14
	SALES AGENT

NUTRIENTS EXTRACTED FROM YOUR SOIL (MODIFIED MORGAN EXTRACTABLE)

		BELOW OPTIMUM	OPTIMUM	ABOVE OPTIMUM
pH	6.4			
Calcium	3109 lbs/acre	*****	*****	*****
Magnesium	406 lbs/acre	*****	*****	*****
Phosphorus	18 lbs/acre	*****	*****	*****
Potassium	370 lbs/acre	*****	*****	*****

Element	ppm	Soil Range
Boron (B)	0.20	0.1-2.0
Copper (Cu)	0.20	0.3-8.0
Iron (Fe)	5.10	1.0-40.0
Manganese (Mn)	3.20	3.0-20.0
Zinc (Zn)	0.80	0.1-70.0
Aluminum (Al)	50	10-300

Estimated Total Lead: Low, typical background levels

LIME AND FERTILIZER RECOMMENDATIONS

CROP OR PLANT: ESTABLISHED LAWN

LIMESTONE:

Apply no limestone.

FERTILIZER:

Phosphorus and Potassium levels are adequate. Therefore, follow the recommendations for maintenance fertilizers shown on the enclosed sheet. Use a lawn fertilizer, such as 10-6-4, 19-4-4, 28-3-8 or 30-4-4.

COMMENTS:

Soil texture classification: Sandy loam

Organic content classification: Medium

CROP OR PLANT: NEW LAWN, SEEDING OR SODDING

LIMESTONE:

Apply no limestone.

FERTILIZER:

After final grading, if seeding, apply 20 lbs of 5-10-5 or 10 lbs of 10-20-10 per 1000 sq ft. Scratch into the soil surface with the seed. If sodding, apply to the soil surface 10 lbs of 10-10-10 per 1000 sq ft after final grading before sod placement. Once the lawn begins to grow, follow the recommendations for maintenance fertilizers shown on the enclosed sheet.

COMMENTS:

Soil texture classification: Sandy loam

Organic content classification: Medium

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RESULTS REPORT

August 25, 2014

Company Name: CHERYL HANCIN
COLCHESTER PARKS & RECREATION
127 NORWICH AVE
COLCHESTER, CT 06415

Lab Number: MA14-164
Sample Name: R8

Textural Analysis

Percentages are Based on the Fine Earth Fraction (Less than 2mm)

Sand:	57.2 %
Silt:	34.6 %
Clay:	8.2 %

According to USDA criteria, this sample classifies as a **SANDY LOAM**. Classification is based on particles that are sand size or finer (i.e. Less than 2 millimeters in diameter.)

Organic Matter

The organic matter as determined by loss on ignition is 5.3%

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