

NECC-2312 Annual State Report For: Connecticut

Reported for period: 2024

Contact	Dr. Avishesh Neupane – Assistant Extension Professor/ Director of UConn Plant and Soil Health Center Patrick McIntosh - Technician
Mailing address	UConn Soil Nutrient Analysis Lab 6 Sherman Place U5102 Storrs, CT 06269
Phone number	860-486-4274
FAX number	860-486-4562
e-mail address	dpj25003@uconn.edu Patrick.mcintosh@uconn.edu Soiltest@uconn.edu
Website address	www.soiltesting.cahnر.uconn.edu

Lab personnel FTE's: 2 + ½ **Special Payroll + students****Extractant(s):** Modified Morgan for mineral soils, water for SME soilless media**Instrumentation:** Spectro Genesis ICP, Unity Westco Smart Chem 170 Discrete Analyzer for ortho-phosphate and nitrate-nitrogen through cadmium, Skalar BluVision Discrete Analyzer for ortho-phosphate and nitrate-nitrogen through vanadium, Elementar VarioMax Cube, Timberline TL-2900 for nitrate and Ammonium**Cost for routine test:** \$15**Routine test includes:** pH, Ca, Mg, K, P, Mn, Cu, Zn, Fe, Al, B, estimated total lead, estimated CEC, % BS, and modified Mehlich buffer pH**Sample Summary: (adjust table as necessary: sample type, source, analyses, and other categories)**

Category	Soil	SME	Compost	Plant	Manure	Water
Total Samples	14667	93	NA	460	NA	NA
Source						
Commercial Producer	1403					
Landscape	7272					
Research	2801					
Teaching	170					
Analysis						
Nitrate/PSNT	77					
Cornstalk NO ₃				16		
Total N	1024					
Total C and/or OM				444		
Solvita CO2						
Other: Tes, OM, SS, pH	1920					

Summary of Research:

- 1) phosphorus and potassium fertility research for cabbage and silage corn and plan to study the relationship between soil test values at depths and crop yield once we buildup the soil test values.
- 2) Study the impacts of Austrian pea and cereal rye cover crop on soil health parameters. UConn shared lab will close temporarily, so we need to find future solutions for soil biological property testing.
- 3) On-farm precision experiments for nitrogen project is concluding this year. We are working on data analysis.
- 4) Soil test methods study for high organic high tunnel soils.

Other/News:

Dawn retired in December 2024 and Avishesh Neupane joined as the lab director in August 2025

NECC-2312 Annual State Report Form

State: Delaware
Year: FY25 - July 1 2024 - June 30 2025

Contact: Karen Gartley Amy Shober
Mailing address: UD Soil Testing Program UD Plant and Soil Sciences
531 S College Avenue 531 S College Avenue
152 Townsend Hall 152 Townsend Hall
Newark, DE 19716-2170 Newark, DE 19716-2170

Voice: 302-831-1385 / 1392 302-831-2146
Email kgartley@udel.edu ashober@udel.edu
Website <https://www.udel.edu/extension/soiltest>

Lab personnel FTE's: 2.2 Full-time, 1.5 Office Hourly MW, 2.5 Lab Hourly MW

Extractant(s): Routine Fertility - Mehlich 3, Adams-Evans Buffer, PSNT - 2M KCl

Instrumentation: Thermo Icap 7600 Due View, Thermo iCAP Pro, Elementar Vario-Max CN and Vario-TOC Cubes, SEAL AA3 FIA and AQ-2 Discrete Analyzer, SCP pH Analyzer, CEM Mars6 Microwave Analyzer and Environmental Express AutoBlock, Blue M High Temperature Furnace

Cost for routine test: \$18,00 Commercial Ag and Professional Landscape, \$22.50 Home L&G with lead

Routine test includes: pH, LR (A-E Buffer), LOI-OM, Mehlich 3 P, K, Ca, Mg, Mn, Zn, Cu, Fe, B, S, Al, Pb

Sample Number Summary (change categories as needed)

	Soil	Plant	Manure	Compost	GH Media	Solution	Misc
Commercial Ag	479						
Landscaper	542						
Homeowner	2368						
Lead Screening	23						
Heavy Metals Screening	116						
Troubleshooter	54	1			7	1	
Research	2284	709		8	3	4335	605
NO3/PSNT	24						

Note: Solutions include water, extracts, hydroponic solutions, etc

Summary of Research: Updating lime recommendations for the Mid-Atlantic
Executing major updates to nutrient recommendations for Delaware crops ahead of a LIMS overhaul
Evaluated routine agronomic soil tests for coastal soil salinity.
Evaluation / comparison of Soil Test P Tests
FRST Research for P and K

News/Other Amy Shober was appointed Faculty Director effective 9/1/25
Working on a proposal for a new LIMS system for the lab / reporting

NECC-2312 Annual State Report for Maine

reported October, 2025

Contact: Bruce Hoskins
Address: 5722 Deering Hall
Orono ME 04469

Voice: 207-581-2945
Email: hoskins@maine.edu
Web site: umaine.edu/soiltestinglab

Lab personnel FTE's: 4 technical, 2 professional, 0.5 Administrative

Extractant(s): modified Morgan (ME, VT); Morgan (NY); NH₄Cl (forest soils), M3 (on request)

Instrumentation: TJA iCAP-6300 ICP, Spectro Genesis ICP (2019), 2-OI FS-3700 Flow Analyzers, Labfit pH system, Leco Tru-Mac & 928 combustion analyzers, Env. Express TKN-100 Block digester, Dionex ICS-1000 Ion chromatograph, CEM MARS-6 microwave system, Milestone DMA-80 Hg analyzer

Cost for routine test: \$20 (\$15 volume for winter discount), \$25 with NH₄/NO₃ (Comprehensive test)
Routine test includes: pH, LR(Mehlich), OM, P, K, Mg, Ca, S, B, Cu, Fe, Mn, Zn; Na, (Cd, Cr, Ni, Pb) screen

Sample Number Summary (for calendar 2024)

	ME+VT+NY		ME+VT				Prepped
	Soil	Plant	Manure	Compost	Metals	Other	for instrument
Commercial	14175	350	340	278	660	40	600 ICP
Homeowner	4300				(TSM+3051)	(lime/fert)	730 TN/TC
Research	415	1782					
NO ₃ /PSNT	3270						
Other	355 M3						
784 HT/125GH							
890 Solvita							
150 Soil Health							
508 Forest soil							
310 PFAS study soils							

Summary of Research (2025)

All USDA grant funding paused briefly. Many grants renewed, but some cancelled.
PFAS a major research focus in Maine: Extension, Chem Eng, MEDEP, MDACF, MECDC, FDA, EPA
New project to study PFAS content in air-borne contaminated soil fractions, caused by tillage.
Chem Engineering PFAS analysis facility delayed opening
Biochar a major research focus for several PI's (moisture retention, soil health, PFAS remediation)
Cover cropping/crop rotation effects on soil health and C sequestration
Project to survey growers using deep compost mulch no-till: documenting nutrient stratification, soil health

News/Other (2025)

Lost administrative/IT staff in December. Primary equipment operator retired Sept 2025.
System-wide hiring freeze has greatly delayed replacing open staff positions, despite full funding.
\$5M earmark update: \$3M for renovations (2 years), \$2M for equipment upgrades
Planning process through 2025. Infrastructure limitations added to cost and scale of renovations.
Renovations to start winter 2025/2026. Many processes & equipment to be moved, then moved back, resulting in brief shutdowns and delays in turnaround time in 2026.

Sample numbers stable/slight increase
Many requests for add-on analysis (NO₃, Part. Size), regardless of cost
High demand for combustion analysis (biochar, PFAS, compost, soil health samples)
Continued ban on all biosolids/biosolids compost applications - *all biosolids landfilled*
Administrative support remains strong for increased lab capabilities for research

NECC-1812 Annual State Report Form

State: Massachusetts
Year: State Fiscal Year (July 1, 2024 - June 30, 2025)

Contact:
Mailing address: 161 Holdsworth Way, Paige Lab Room 102, Amherst, MA 01003

voice:
fax:
email: soiltest@umass.edu
web site: <https://www.umass.edu/agriculture-food-environment/services/soil-plant-nutrient-testing-laboratory>

Lab personnel FTE's: 4.75

Extractant(s): Modified Morgan (nutrients); Modified Mehlich (buffer pH)

Instrumentation:

Cost for routine test: \$20
Routine test includes: pH, P, K, Ca, Mg, S, B, Mn, Zn, Cu, Fe, Al, Pb, CEC, EA, Base Saturation (Ca, Mg, K), scoop density

Sample Number Summary (change categories as needed)

	Soil	Plant	Manure	Compost	Metals	Other (SME)
Commercial		4				
Homeowner						
Research		300				
NO3/PSNT						
Other	12800				570	72

Routine Soil
13,550 September 2024 - August 2025
14,000 September 22, 2024 - September 22, 2025

Summary of Research

SARE multistate project focusing on high OM materials
Massachusetts Healthy Soils Action Plan project - liming in no-till soils with and without acidifying N fertilizers

News/Other

NECC-2312 Annual State Report For New Hampshire

Reported for period: July 2024 – June 2025

Contact	Renuka Mathur/Shyloh Favreau
Mailing address	UNH Cooperative Extension Soil Testing Service 34 Sage Way Durham, NH 03824
Phone number	603-862-3200
FAX number	
e-mail address	Soil.testing@unh.edu
Website address	https://extension.unh.edu/agriculture-gardens/pest-disease-growing-tools/soil-testing-services

Lab personnel FTE's: 1 plus 1 student intern. Student works 10 hours per week.**Extractant(s):** Mehlich3**Instrumentation:** ICP for all nutrients; OM by combustion**Cost for routine test:** \$16 + OM (\$4)**Routine test includes:**

- Homegardens:** Ca, Mg, P, K, pH, BpH, and OM;
- Commercial corn, pasture, hay and forage samples:** Ca, Mg, K, and P, pH and BpH, calculated CEC, BS and phosphorus saturation. Organic matter as add on.
- Commercial fruits, vegetables and field nurseries:** Ca, Mg, K, and P, pH and BpH. Organic matter as add on.

Sample Summary: (adjust table as necessary: sample type, source, analyses, and other categories)

Category	Soil	SME	Compost	Plant	Manure	Water
Total Samples						
Source						
Commercial Producer	636		24			
Landscape	52					
Home Gardens	2139					
Teaching						
Analysis						
Nitrate/PSNT						
Cornstalk NO ₃						
Total N	59					
Total C and/or OM	2365					
Solvita CO ₂						
Other:						

Summary of Research:

- 1) New LIMS development is in progress. We are hoping to launch it in Spring 2026.
- 2) Biochar-composted manure study: Investigating the effects of mixing ratios of biochar and composted manure amendments on key soil properties (nutrient levels, organic matter, and soil microbiome) and corn yield in sandy loam soils.
- 3) Biochar SFN study: Initiated a study to assess the effects of different treatments of biochar and cover crops on the establishment and growth of conifers and hardwood seedlings over a three-year period at NH State Forest Nursery (SFN).
- 4) Preliminary evaluation of MicroBiometer test kit under various management system was conducted as a summer student intern project.

Other/News:

1. Cooperative Extension has merged with College of Life Sciences and Agriculture effective July 1, 2025.
2. Include soil testing for commercial cutflowers growers in Fall 2026.
3. Expend tissue testing service for commercial vegetable growers.

NECC-1812 Annual State Report for Pennsylvania

Reported for period: FY25

Contact	John Spargo	Charlie White
Mailing address	720 Tower Rd. Penn State University University Park, PA 16802	116 ASI Building Penn State University University Park, PA 16802
Phone number	814-865-9155	814-863-1016
e-mail address	jts29@psu.edu	cmw29@psu.edu
Website address	www.aasl.psu.edu	http://extension.psu.edu/plants/nutrient-management

Lab personnel FTE's: 16 full-time (+4 PT); Hired two new FT laboratory staff: Abigayle Ward (Haiying's MS student), Environmental Testing Program Lead; and Kyle Elkin, Director of Laboratory Operations.

Extractant(s): Mehlich 3, Modified Mehlich Buffer

Instrumentation: 2 Agilent 5900 and 1 Varion 730-ES ICP; 2 Labfit AS-3010D automated pH analyzers; 2 Elementar VarioMax Cube, 1 Elementar Rapid Max Exceed; 1 Automation Techniques, Inc. 6 channel regent (M3) dispenser, custom-made; 2 Timberline-2800 NH3 analyzer; 1 FIAlyzer-1000 (Cd-reduction, dialysis, NO3); 1 TSI automated OM weigher

Cost for routine test: \$10

Routine soil fertility test includes pH, BpH, Mehlich 3 P, K, Ca, Mg, S, Cu, and Zn

Sample Summary:

Category	Soil	SME/ Greenroof	Compost	Plant	Manure & Biosolids	Water
Total Samples	54,000 (no change)	900 (30% increase)	1,390 (no change)	10,000 (no change)	1,000 (no change)	3,300 (6% increase)

Summary of Research:

- 1) Modernizing Fertilizer Recommendations: Fertilizer Recommendation Support Tool (FRST). An ongoing collaborative effort of over 100 individuals representing 41 land-grant, two-state universities, and one private university, three divisions of the USDA, and three non-profit organizations. FRST is led by Nathan Slaton (UA; SERA 6), Luke Gataboni (NCSU; SERA 6), Matt Yost (USU; WERA 103), Daniel Keiser (UMN; NCERA 13), and John Spargo (PSU; NECC 2312). Briefly, in FY25, the FRST project hosted twelve virtual working group meetings, presented 12 papers at professional meetings, and submitted three refereed manuscripts (one published, one in-press, and one in review). Work continued in support of three USDA-CIG grants to conduct soil test correlation field trials in the Northeast and Southern regions. An additional CIG grant was awarded to fund research in the North Central region, supporting FRST (led by Daniel Kaiser). We have continued to garner support from the private sector. FRST collaborators received funding from OCP to support 18 field trials in 2025. Two new efforts include: 1) research to calibrate soil buffers (and other methods) used to estimate soil acidity and make lime recommendations; and 2) the addition of S to the FRST database. Finally, the FRST database now includes data from more than 3,000 trials.

- 2) Crediting Cover Crops and Soil Organic Matter in Nitrogen Fertilizer Recommendations. Developing and validating algorithms for cover crop and soil organic matter N credits. Testing variations of the algorithm in different cover crop management systems.
- 3) Mid-infrared FTIR spectroscopy to evaluate soil organic matter chemistry and other parameters. Mid-infrared spectroscopy is being used to assess the prevalence and relative composition of different soil organic matter functional groups, as well as their association with soil health metrics such as total C and N, POM C and N, POXC, and CO₂ burst.
- 4) Updating the Corn Stalk Nitrate Test to evaluate sufficient/excess N. A database of N response trials in corn has recently been compiled in Pennsylvania, where the corn stalk nitrate test was conducted. The database will be analyzed from both an agronomic and economic perspective to determine if updates to the interpretive ranges are needed.
- 5) Evaluating enhanced rock weathering of basalt as an alternative liming agent. Enhanced mineral weathering of silicate rocks has recently been proposed as an effective climate change mitigation strategy for deployment on arable lands. Rock dust from basalt and olivine quarries are now available to farmers in the mid-Atlantic region. These silicate amendments can serve as an alternative liming agent and potentially supply some essential nutrients. However, the reaction rate, acid-neutralizing capability, and availability of nutrients are not well understood. Multi-year trials are ongoing at the Penn State Agronomy Research farm to evaluate the effects of basalt, olivine, limestone, and an untreated control on soil pH, Mehlich 3 nutrients, and crop yields in soybean and corn. Suction lysimeters are also installed in the subsoil to measure, including alkalinity and anion/cation balances in leachate water.
- 6) Evaluating poultry litter biochar as a soil amendment. A field trial is underway to evaluate biochar produced from poultry litter as a soil amendment. Rates from 0.5 T/ac to 2T/ac of biochar will be assessed for two years of application in a corn/soybean rotation, measuring changes in soil fertility parameters, crop yield, tissue nutrient concentrations, PLFA, soil inorganic N pools, and CO₂ burst.

NECC-1312 Annual State Report For Rutgers/NJAES Soil Testing Laboratory

Reported October 2025 for period: July 2024 – June 2025

Contact	Stephanie Murphy, Ph.D.
Mailing address	57 US Highway 1 (ASB-II, Cook Campus), New Brunswick, NJ 08901
Phone number	848-932-9295
e-mail address	soiltest@njaes.rutgers.edu
Website address	https://extension.rutgers.edu/soil-testing-lab

Lab personnel FTE's: 3.8 (director, 2 lab technicians, Admin. Asst./Business Asst.)**Extractant(s):** Mehlich-3**pH Buffer:** Adams-Evans

Instrumentation: ThermoScientific iCAP Pro ICP Spectrometer (duo),
Elementar vario MAX cube CN analyzer,
Seal Analytical Autoanalyzer,
Seal minilab pH robot,
Bruker S1 Titan pXRF

Cost for routine test: \$20

Routine test includes: Soil pH, Adams-Evans buffer pH, P, K, Ca, Mg, S, Cu, Mn, Zn, B, Fe;
recommendations for 2 crops/plantings.

Sample Summary:

Category	Soil	SME	Compost	Plant	Water
Total Samples	7363	76	85	168	16
Source					
Commercial Producer	524	9	5	-	3
Landscape/Garden	4553	54	27	-	7
Rutgers Research/Ext/Teaching	743	12	2	168	-
Engineering	1251	1	51	-	2
Sports Field/Golf Course	96				4
Analysis					
Nitrate/PSNT	597	38	83	-	16
Cornstalk NO3	-	-	-	-	-
Total N – combustion	495	-	73	168	
Total C – combustion; OM%	1944	-	72	-	-
LOI OM%	513	2	73	-	-
Solvita CO2	358			-	-
Pb by pXRF	243		-	-	-
Acid-producing minerals	253	-	-	-	-
Texture by hydrometer	1417	-	-	-	-
Sieve Analysis: USDA etc.	427	-	-	-	-

Other news

Admin Asst replaced with Business Assistant (funded by business office)

Cost of fringe benefits of another technician absorbed by RCE

Investment in equipment

Pario Plus (Meter Group) for more precise particle-size distribution (cf. hydrometer)

Seal DEENA II (?) for plant tissue digestion

Seal autoanalyzer or discrete analyzer (?)

Relocation of laboratory

Retirements planned for 2026

Principal Laboratory Technician (September)

Laboratory Director (December)

Summary of Soil Testing & Fertility Activities/Accomplishments:

J. Heckman

Research:

1. Rock Powder as a soil Fertility Amendment
2. FRST Soil Test Potassium Calibration with Cabbage
3. Homemade Fertilizer for the Home Lawn
4. Survey of Nickel Levels in New Jersey Soils

Newsletters/Publications

Translation Into Certified Organic Recommendations

<https://paorganic.org/resources/organic-matters/organic-matters-summer-fall-2025/soil-test-report/>

Nickel Soil Fertility Research: <https://njaes.rutgers.edu/soil-profile/pdfs/sp-v27.pdf>

S. Murphy

Publications:

Payment for Ecosystem Services and Climate Change,

<https://njaes.rutgers.edu/FS1374/>

M. Kaplan, A. Hu, S. Murphy, M. Robson

Sequestration of Carbon on Agricultural Lands,

<https://njaes.rutgers.edu/FS1375/>

M. Kaplan, A. Hu, S. Murphy, M. Robson

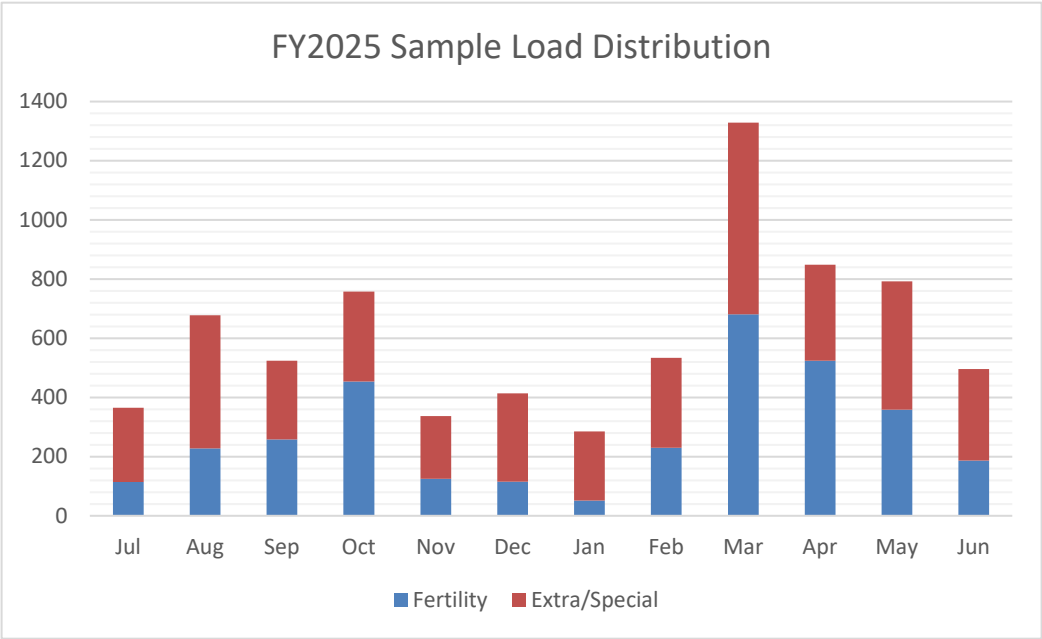
Draft submitted: **Soil pH and Lime Requirement for Home Grounds Plantings**

S. Murphy

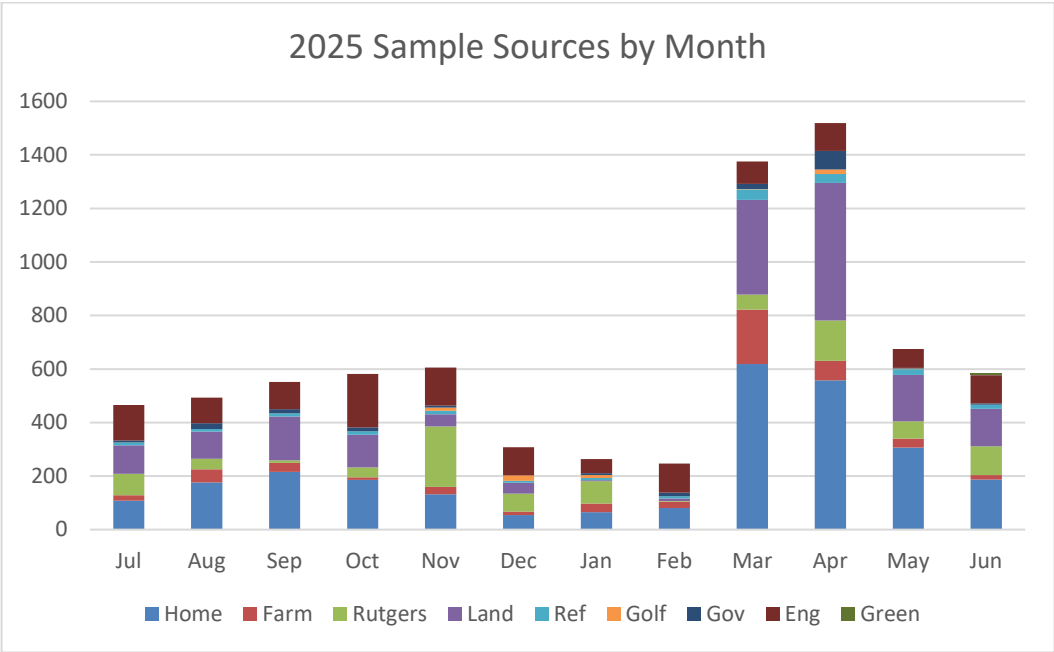
Research/Outreach:

- McIntire-Stennis Forestry Grant Proposal: Forestland Conservation Needs Assessment and Program Design (Jason Graboski, PI)
- USDA Climate Hubs' Climate Adaptation and Mitigation Fellowship – serving as “educator” in the Northeast Diversified Ag and Agroforestry program (just revived after being frozen)
- National FRST Lime Project – providing data for Adams-Evans buffer

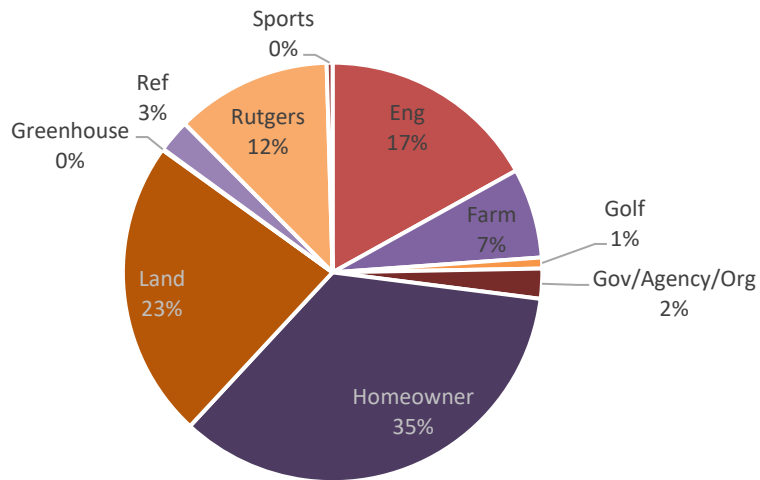
Data/Graphics from FY25 Annual Report:



About 50% of samples had extra or special tests performed (other than or in addition to standard fertility test)



FY2025 Soil Sample Source Distribution

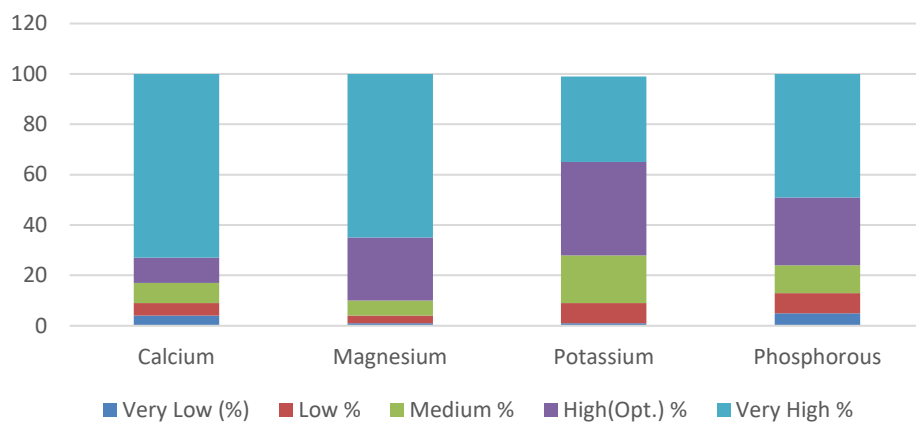


Data:

2025 pH Result Distribution - Relative to Target pH



FY2025 Soil Samples' Macronutrient Levels



Samples with at least one element below optimum: 50%

FY2025 Soil Lead Screeing Summary

