

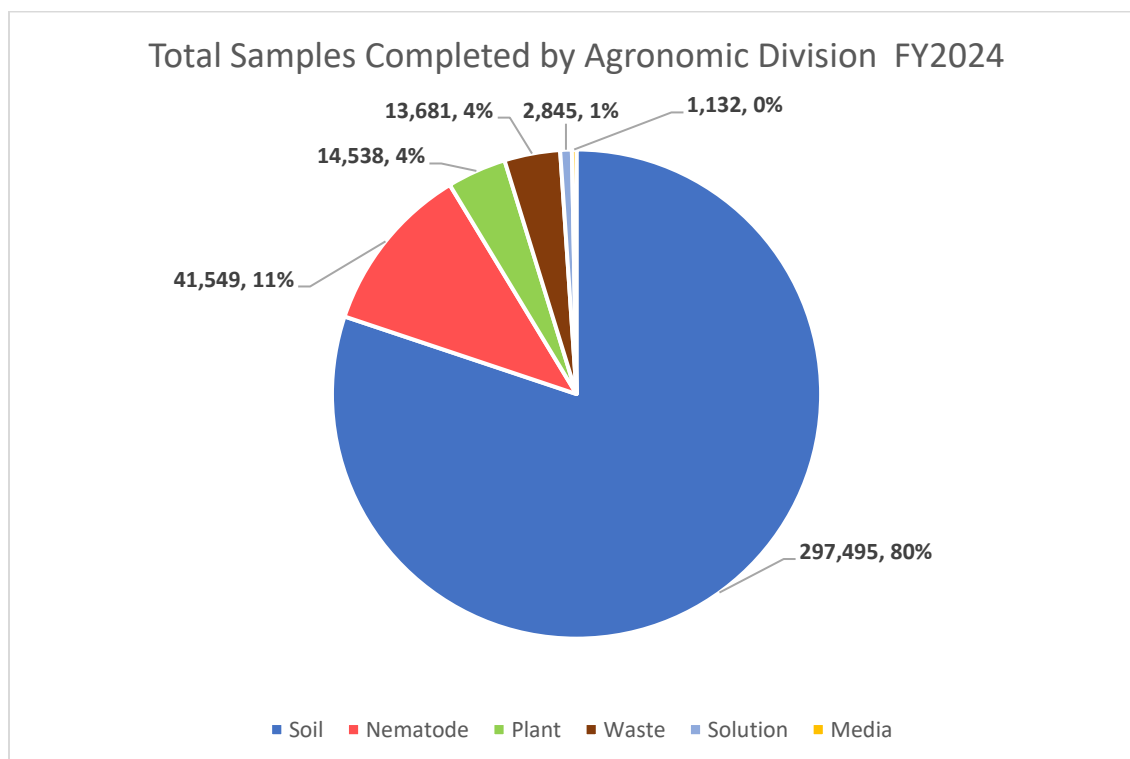
Agronomic Division —2024 Annual Report

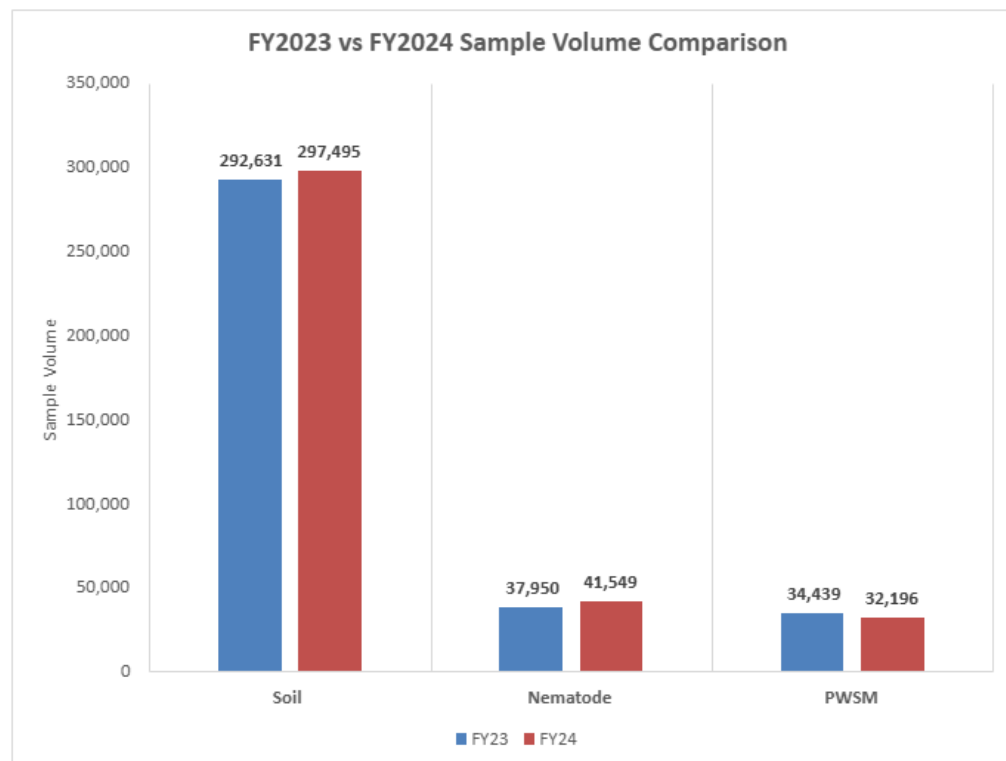
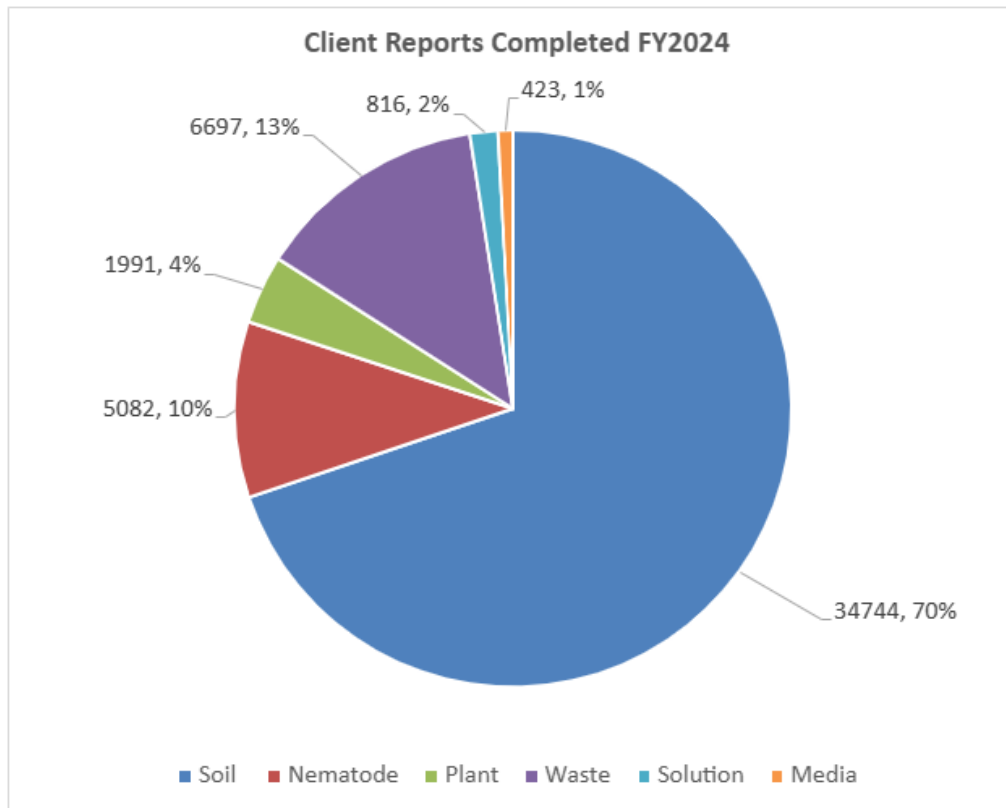
David H. Hardy, Ph.D., Director, (919) 664-1600

Introduction

The Agronomic Services Division's mandate is to provide all North Carolina residents with diagnostic and advisory services that increase agricultural productivity, promote responsible land management, and safeguard environmental quality. The Agronomic Services Division is the largest publicly operated agronomic laboratory in the country, offering the following laboratory services: soil testing, plant tissue analysis, waste analysis, solution analysis, soilless media analysis, and nematode assay.

The Agronomic Division's laboratories processed 371,240 total samples during FY2024 (July 1, 2023 – June 30, 2024), which is approximately a 2% increase over the previous year. Over 49,700 reports with test results and recommendations were prepared for clients during FY2024.



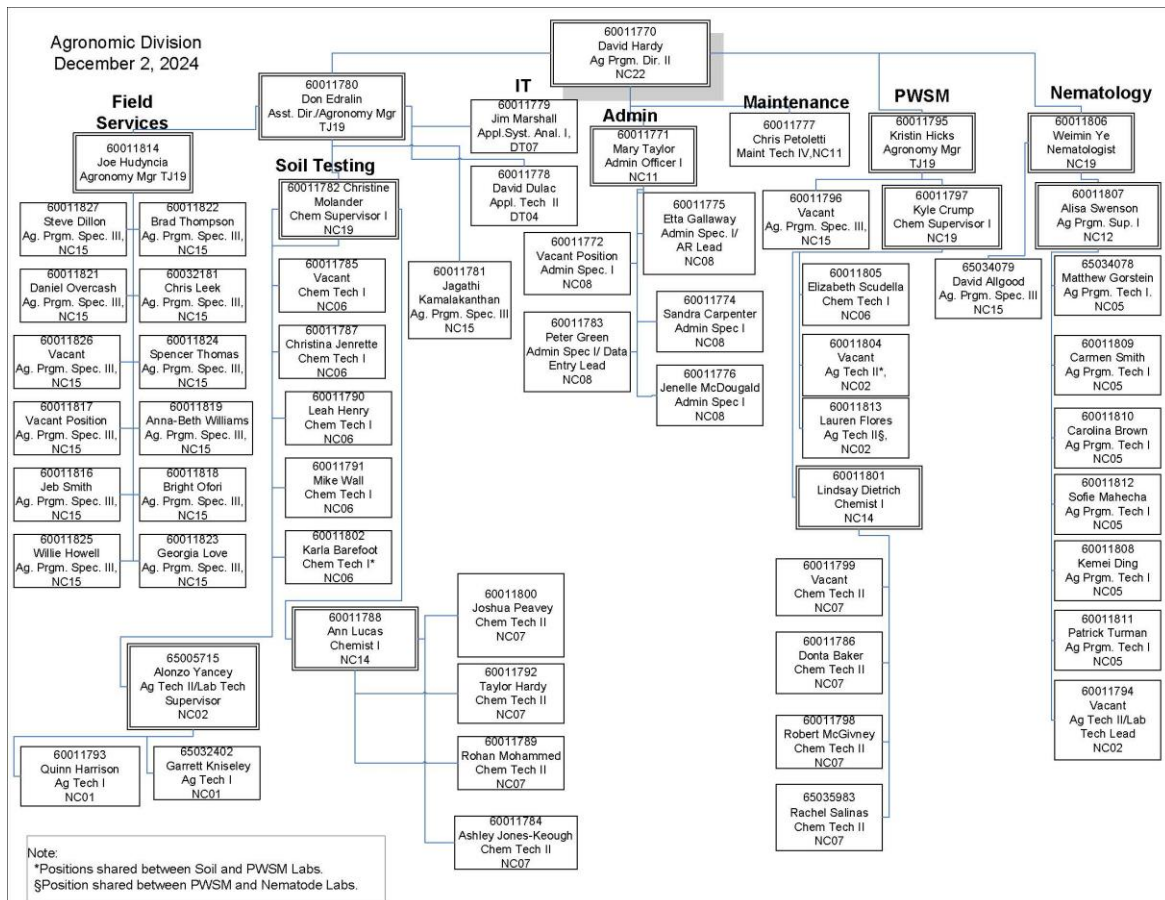


Milestones

A major accomplishment for 2024 was the completion of the roof fan project (12 fans) for the three labs. Work began on a deionized water project in replacing all piping for the lab.

Personnel

The Division had 60 full-time permanent positions during calendar year 2024: 17 office positions, including administrative support, information technology, maintenance, and leadership positions; 31 laboratory staff distributed across three laboratories (Soil Testing, Nematode Assay and Plant/Waste/Solution/Media) and 12 regional agronomists who make up the Field Services Section. Regional agronomists are assigned to territories consisting of 5 to 11 counties; they conduct grower consultations to help diagnose nutrient and/or nematode problems and to offer expert advice regarding plant nutrient management for waste management plans. The Agronomic Services Division's organizational chart (December 2, 2024) and the Field Services territorial map (May 2, 2024) follow.



Tristan Morris, Region 1
Cell: (252) 308-3857
Email: tristan.morris@ncagr.gov

Bright Ofori, PhD, Region 2
Cell: (757) 304-2572
Email: bright.ofori@ncagr.gov

Jeb Smith, Region 3
Cell: (252) 550-0171
Email: jeb.smith@ncagr.gov

Willie Howell, Region 4
Cell: (919) 604-4106
Email: willie.howell@ncagr.gov

Georgia Love, Region 5
Cell: (910) 690-0270
Email: georgia.love@ncagr.gov

Spencer Thomas, Region 6
Cell: (704) 202-0442
Email: spencer.thomas@ncagr.gov

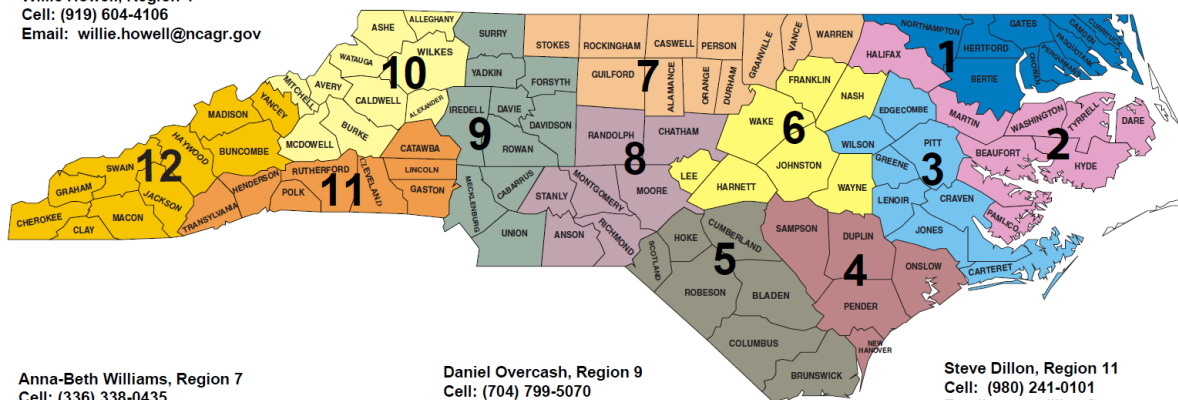
NCD&CS Agronomic Division Field Services

May 2024

Section Chief: Joe Hudyncia
Phone: (919) 664-1605
Email: joseph.hudyncia@ncagr.gov

Physical Address: 4300 Reedy Creek Rd.
Raleigh NC 27607-6465
Mailing Address: 1040 Mail Service Center
Raleigh NC 27699-1040

www.ncagr.gov/divisions/agronomic-services/field-services



Anna-Beth Williams, Region 7
Cell: (336) 338-0435
Email: anna-beth.williams@ncagr.gov

Daniel Overcash, Region 9
Cell: (704) 799-5070
Email: daniel.overcash@ncagr.gov

Steve Dillon, Region 11
Cell: (980) 241-0101
Email: steve.dillon@ncagr.gov

Brad Thompson, Region 8
Cell: (919) 810-5793
Email: brad.thompson@ncagr.gov

Vacant, Region 10

Chris Leek, Region 12
Cell: (828) 507-8671
Email: richard.leek@ncagr.gov

Staff turnover during 2024 included several positions. The following is a description of the personnel changes that took place during 2024.

Personnel Changes for Calendar Year 2024 (Permanent Staff)

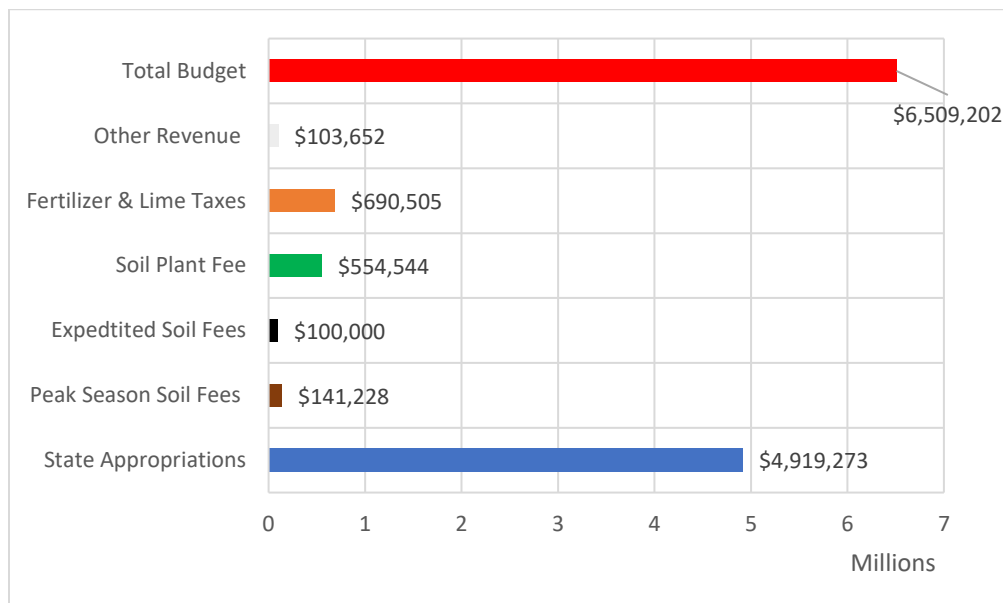
- Administrative Specialist I – 60011772
February 2024 – Zachary Hayes resigned.
December 2024 – position vacant.
- Agricultural Technician I – 65032402 (receipt supported position)
December 2023 – position vacant; Gabriel Williams promoted to Ag Tech II nematode lab
June 2024 – Garrett Kniseley hired.
- Agricultural Program Director II - 60011770
April 2024 – Dr. Colleen Hudak-Wise retired.
May 2024 – Dr. David H. Hardy appointed.

- Assistant Director / Soil Testing Section Chief - 60011780
April 2024 – Dr. David H. Hardy promoted. Position vacant
August 2024 – Dr. Don Edralin hired.
- Agricultural Program Specialist III (Regional Agronomist) - 60011818
December 2022 – Carla Pugh resigned
December 2023– position vacant.
April 2024– Bright Ofori hired.
- Agricultural Program Specialist III (Regional Agronomist) – 60011816
August 2023 – Makala Humphrey resigned.
December 2023 – position vacant.
March 2024– Jeb Smith hired.
- Agricultural Program Specialist III (Regional Agronomist) – 60011817
December 2023 – Dwayne Tate retired. Position vacant.
December 2024– position vacant.
- Agricultural Program Specialist III (Regional Agronomist) – 60011826
August 2024 – Tristan Morris resigned. Position vacant.
December 2024– position vacant.
- Agricultural Program Specialist III (Agronomist) – 60011796
August 2024 – Dr. Don Edralin promoted. Position vacant.
December 2024– position vacant.
- Agricultural Technician II – 60011813
March 2024 – Brooke Wilson resigned
October 2024 – Lauren Flores hired.
- Agricultural Technician II – 60011794
April 2024 – Gabriel Williams resigned.
December 2024 – Vacant
- Agricultural Technician II – 60011804
July 2024 – Sylvia Neal resigned. Position vacant.
December 2024 – Will Klinger hired.
- Agricultural Program Technician I – 60011810
December 2023 – Jacque Pavel resigned. Position vacant.
May 2024 – Carolina Brown hired.
- Agricultural Program Technician I – 60011812
December 2023 – David Allgood promoted. Position vacant.
September 2024 – Sofie Mahecha hired.

- Chemistry Technician I – 60011805
January – 2024 Krystyna Fener resigned.
October – 2024 Elizabeth Scudella hired.
- Chemistry Technician II – 60011792
March 2024 – Michael Jennette retired. Position vacant.
September 2024 – Taylor Hardy hired
- Chemistry Technician I – 60011785
September 2024 – Taylor Hardy promoted. Position vacant.
December 2024 – Vacant

Funding

The Agronomic Services Division's expenditures for FY2024 were greater than \$6.5 million. Sources of funding included State Appropriations, expedited soil shippers, peak-season soil fees, fertilizer and lime taxes, and sample fees (nematode, plant, waste, solution, and media samples) listed as Soil Plant fee in the below graph.



Laboratory Services

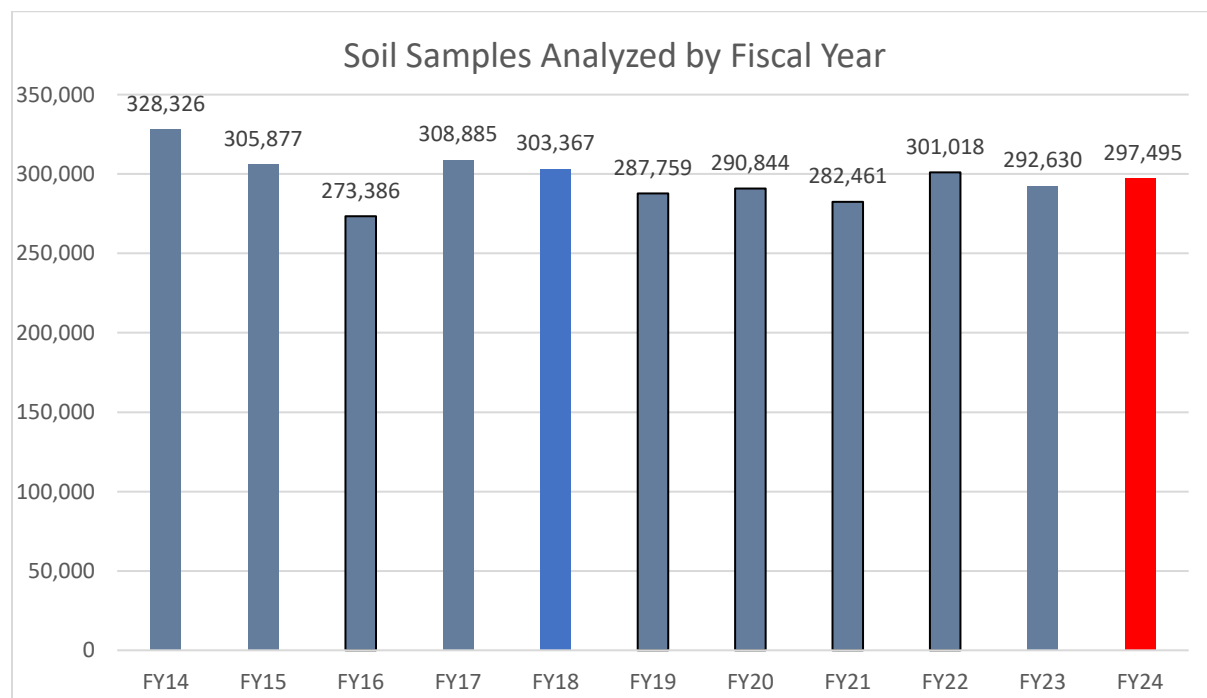
Quality Analysis/Quality Control

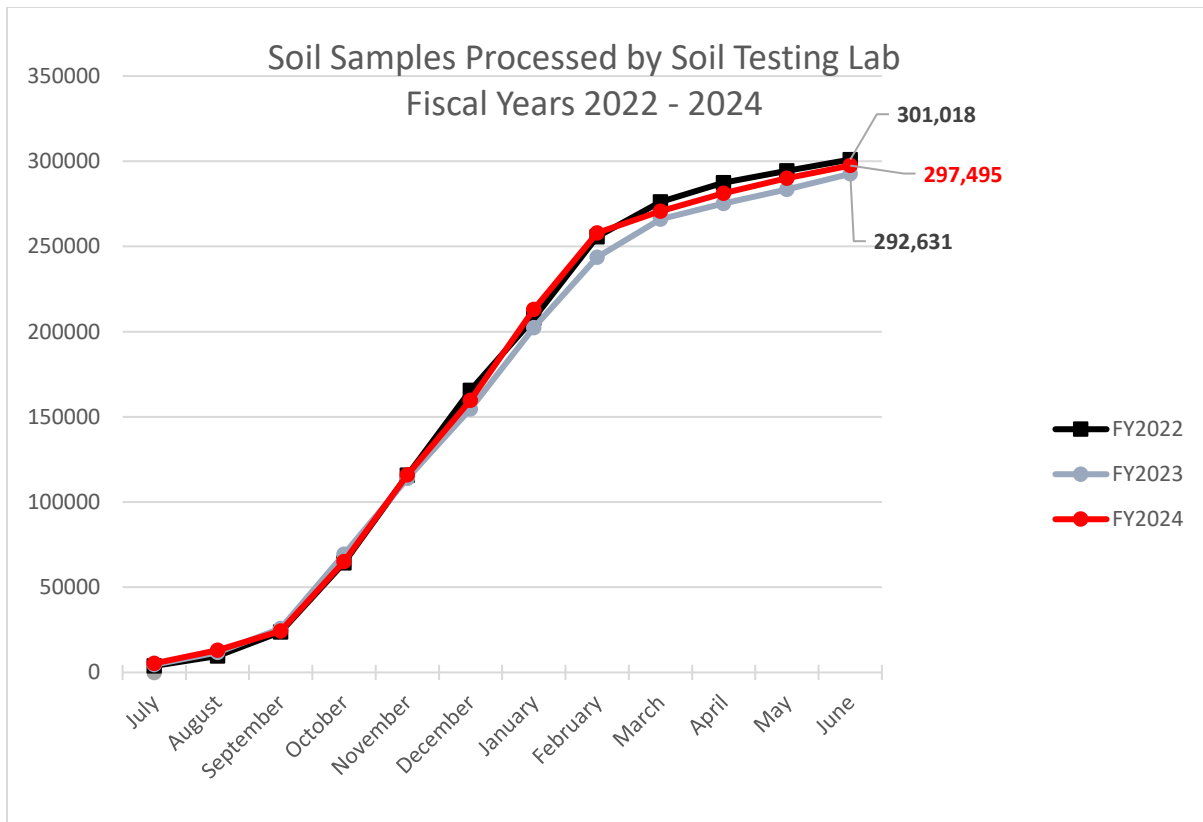
The Soil Testing and Plant/Waste/Solution/Media Advisory Laboratories participate in several external quality control programs. Annual analysis of unknown samples provided by an accredited proficiency testing provider is part of the laboratory recertification process by the Division of Environmental Quality's Division of Water Resources' Laboratory Certification Branch. The Agronomic Division passed its proficiency testing in 2024 and remains certified by DEQ through 2025.

The Agronomic Division also voluntarily participated in the following inter-laboratory proficiency testing and certification programs during 2023:

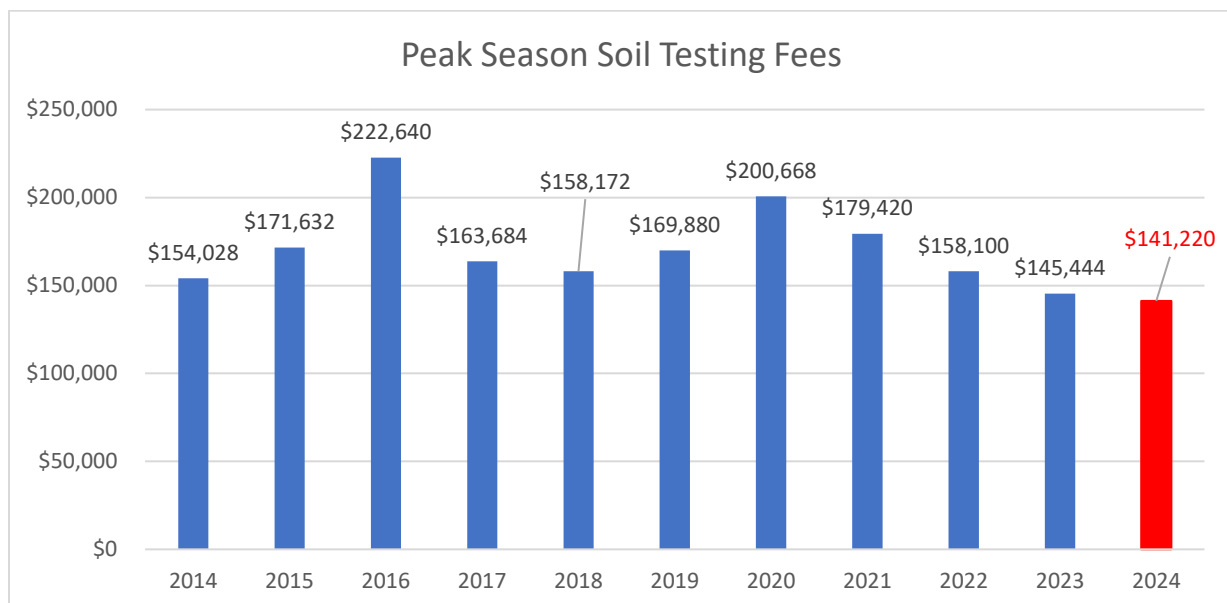
1. North American Proficiency Testing Program (NAPT) – soil analyses
2. Manure Analysis Program (MAP) – manure analyses
3. Agricultural Laboratory Proficiency program (ALP) – soil and plant tissue analyses

The **Soil Testing Section**, under the direction of David H. Hardy, Ph.D., analyzed 297,495 soil samples in FY2024, making this the fifth highest sample volume in the past ten years. Sample distribution was as follows: 271,095 predictive; 16,501 predictive expedited samples; 1,596 diagnostic; 7,018 research; 1,204 internal; 60 heavy metals; and 21 witchweed. The Soil Testing Lab issued a total of 34,744 reports for fertilizer/lime recommendations. Total sample volume for FY2024 was up about 3% compared to the previous fiscal year.

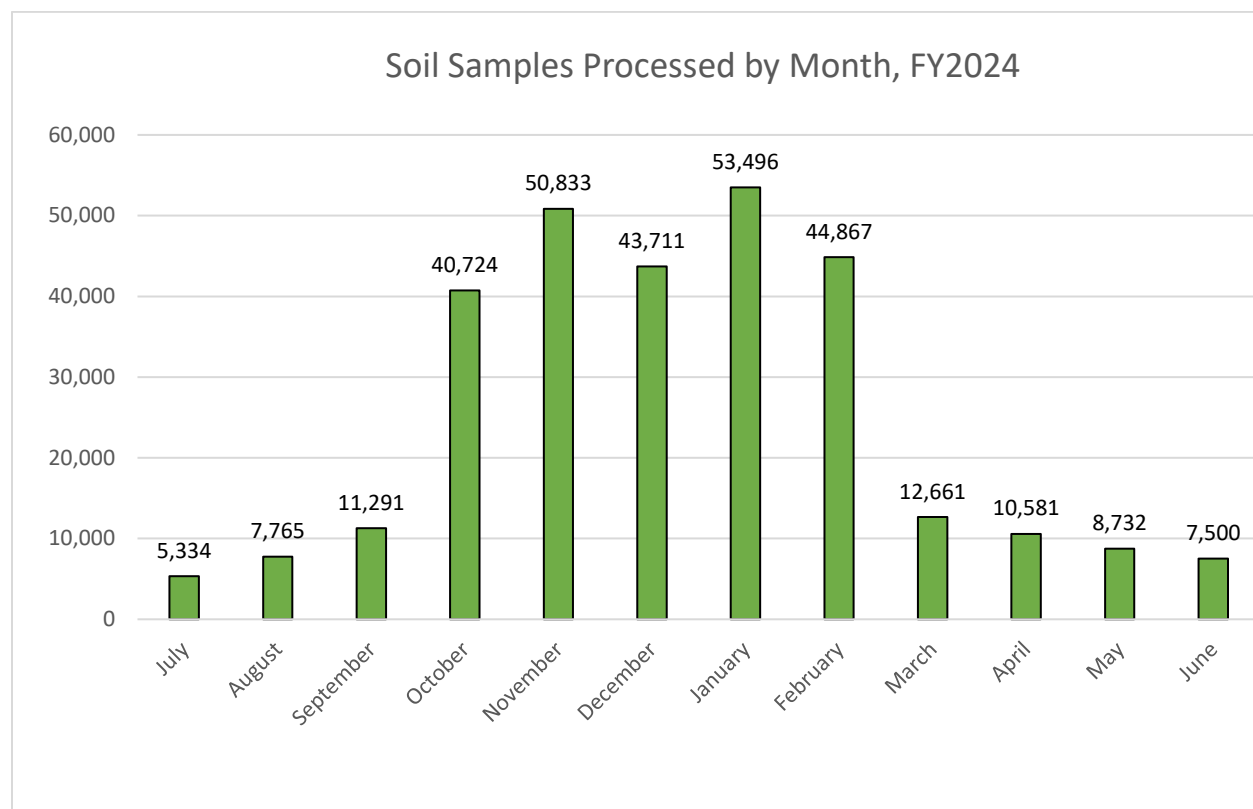




A total of \$141,220 was collected in peak-season soil testing fees (\$4.00/sample) for samples submitted December 1, 2023, through March 31, 2024. Peak-season samples (35,305) represented 12% of the total sample volume analyzed by the Soil Testing Lab.



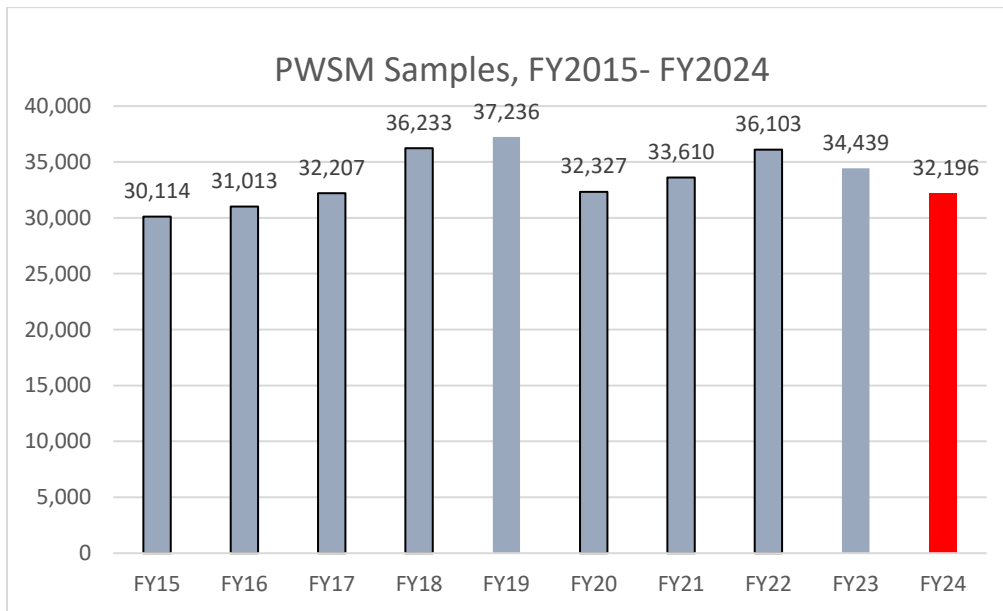
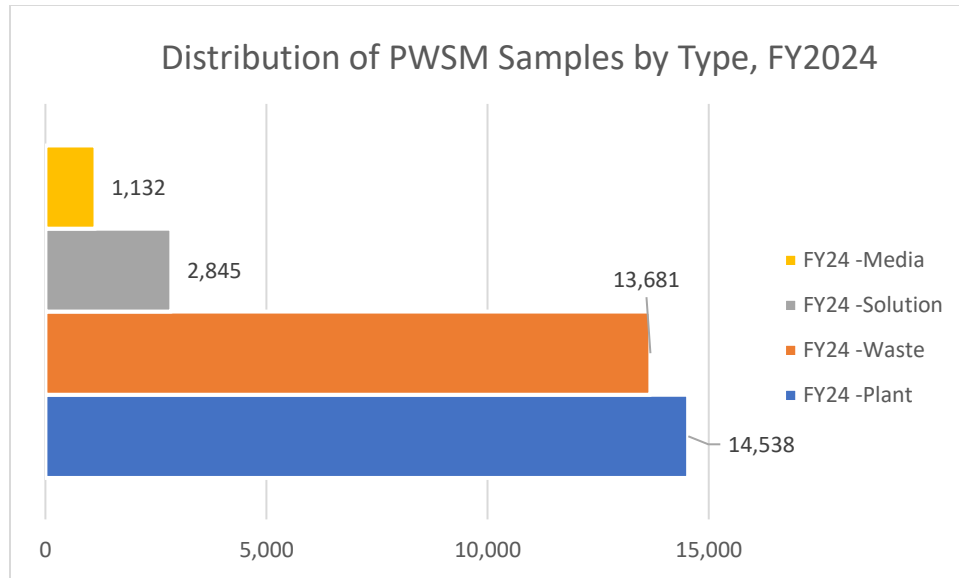
As seen below, the peak-season fee achieved its intended purpose, to distribute the workload for the Soil Testing Lab more evenly across the year. January 2024 was the busiest month of FY2024, with 53,496 soil samples analyzed.



For high-volume customers wanting a guaranteed turnaround time of 7 to 10 business days, a limited number of 36-sample “expedited shippers” were sold at \$200 each. During FY2024, 16,501 samples (~6% of total sample volume) were submitted to the Soil Testing Laboratory in expedited shippers.

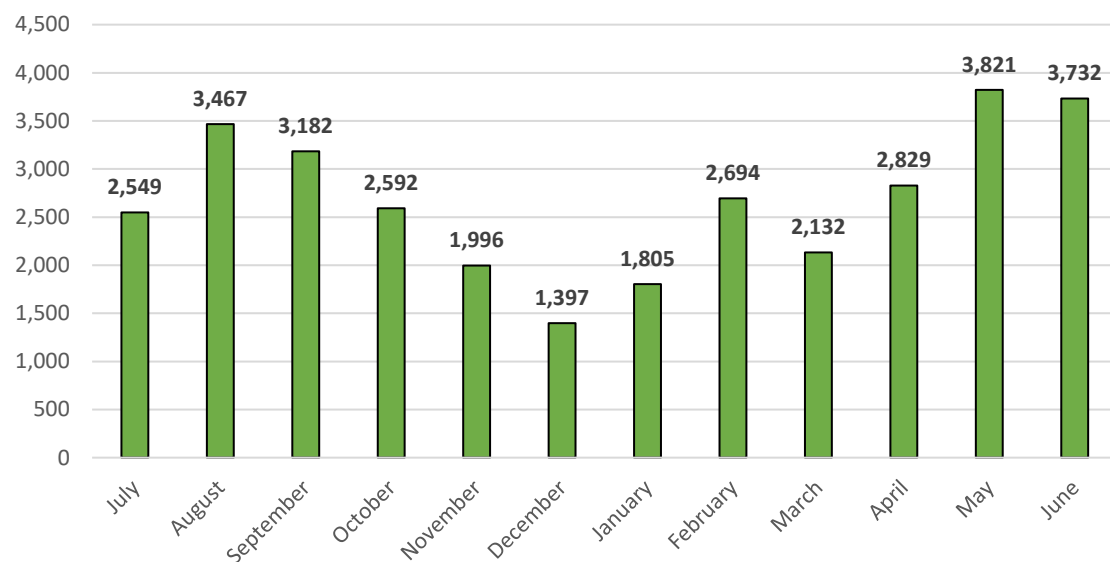
In general, the sample turnaround times were very acceptable for growers during FY2024. Soil sample turnaround for predictive samples plateaued at eleven weeks on December 1, 2023, but then dropped back down to two weeks by February 10, 2024.

The **Plant/Waste/Solution/Media (PWSM) Section**, under the direction of Kristin Hicks, Ph.D., issued a total of 9,927 reports during FY2024. These reports gave recommendations for 14,538 (45%) plant tissue samples; 13,681 (43%) waste samples; 2,845 (9%) solution samples; and 1,132 (4%) soilless media samples in FY2024. Overall, the annual sample volume was down about 7% compared to the previous fiscal year. With few exceptions, the following turnaround times were able to be maintained throughout the year: plant, 2 days; media and solution, 3 to 4 days; and waste, 7 to 10 days.

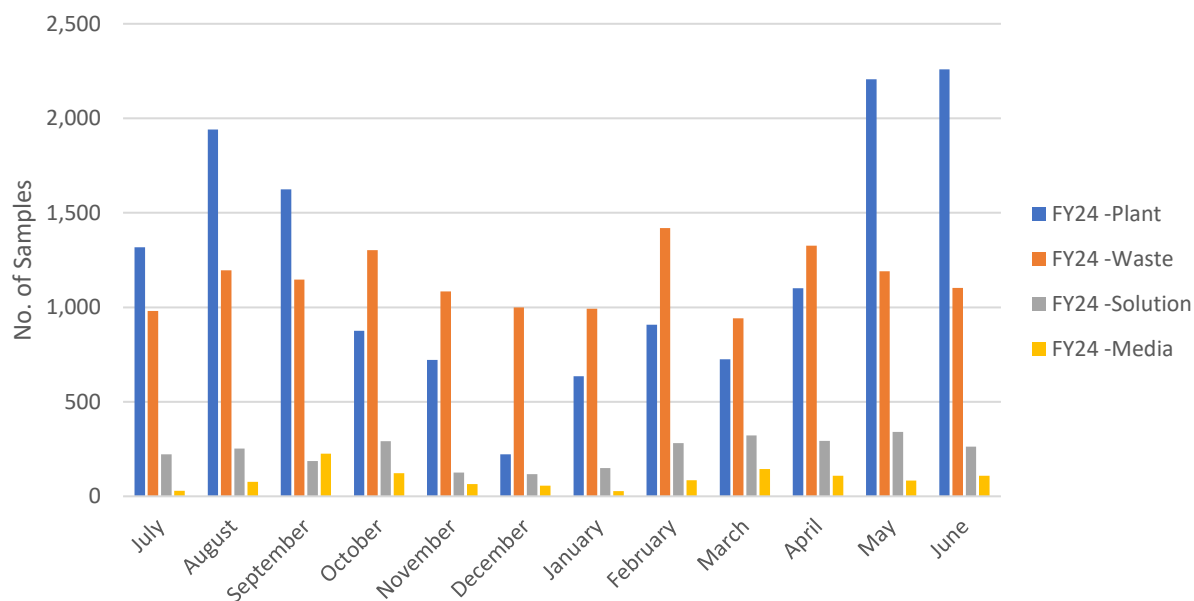


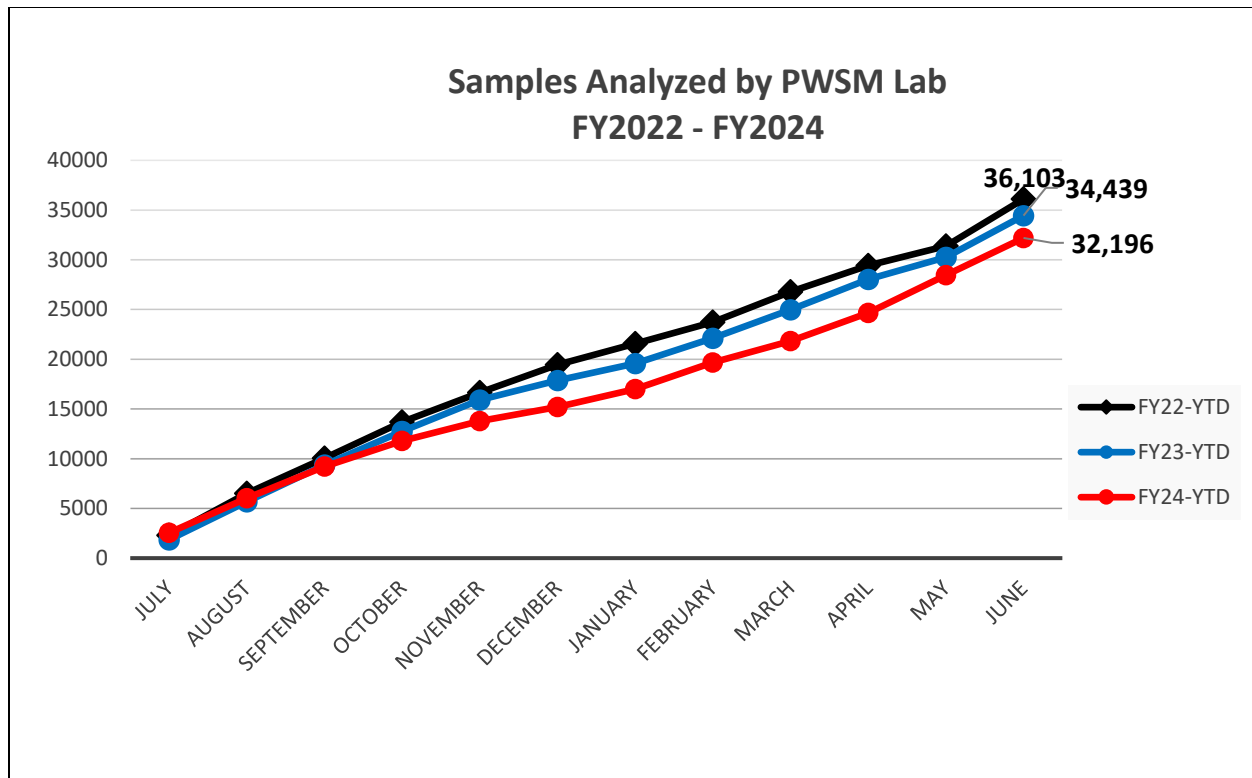
The busiest month for the PWSM Section was May of the fiscal year, with 3,821 samples analyzed. In total, 32,196 samples were processed during FY2024.

Total Plant, Waste, Solution and Media Samples Analyzed Monthly - FY2024

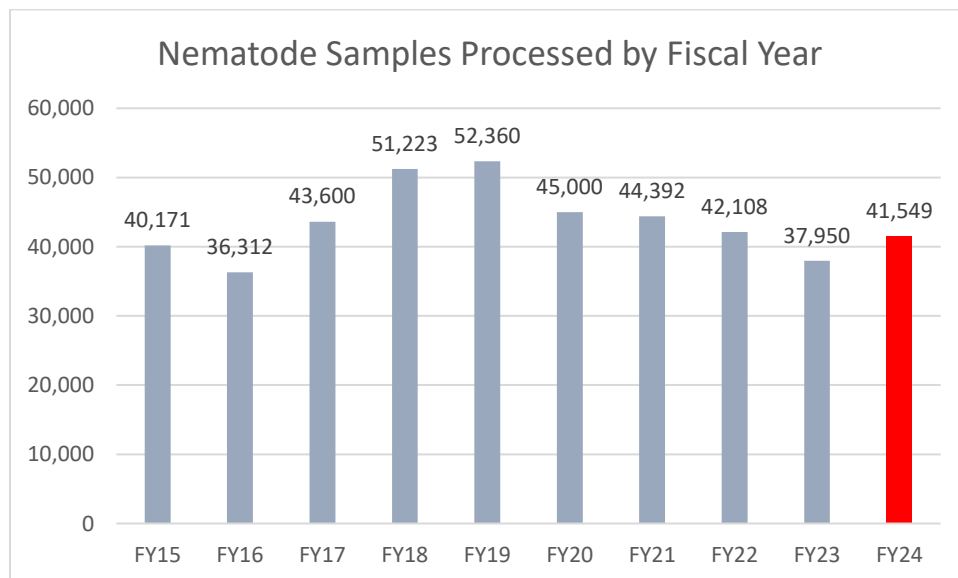


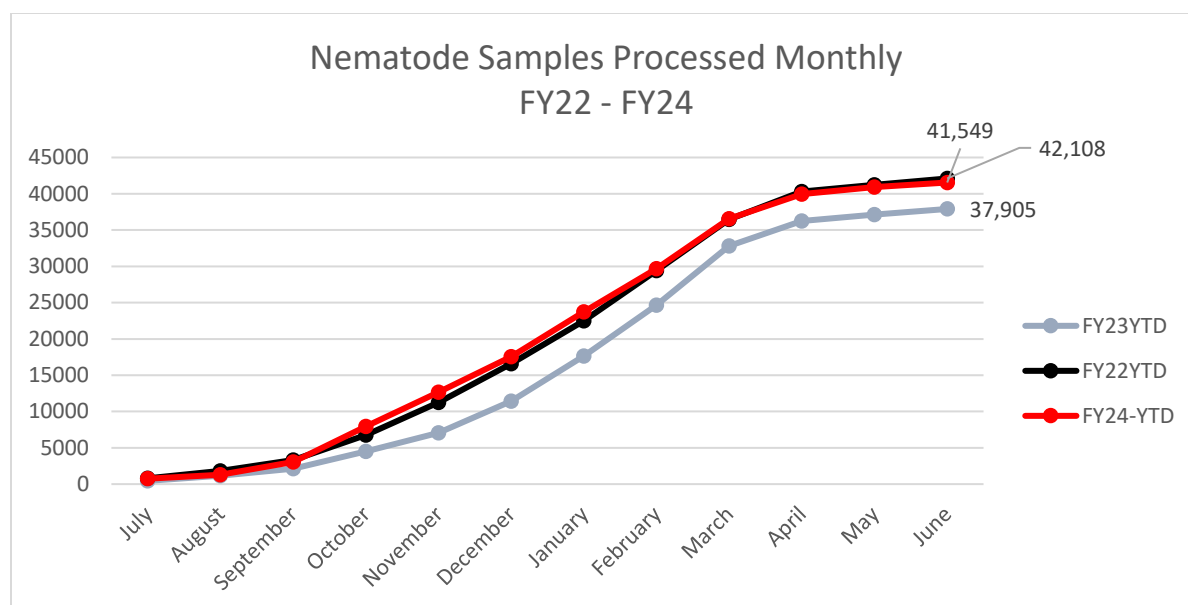
Distribution of PWSM Samples for FY2024



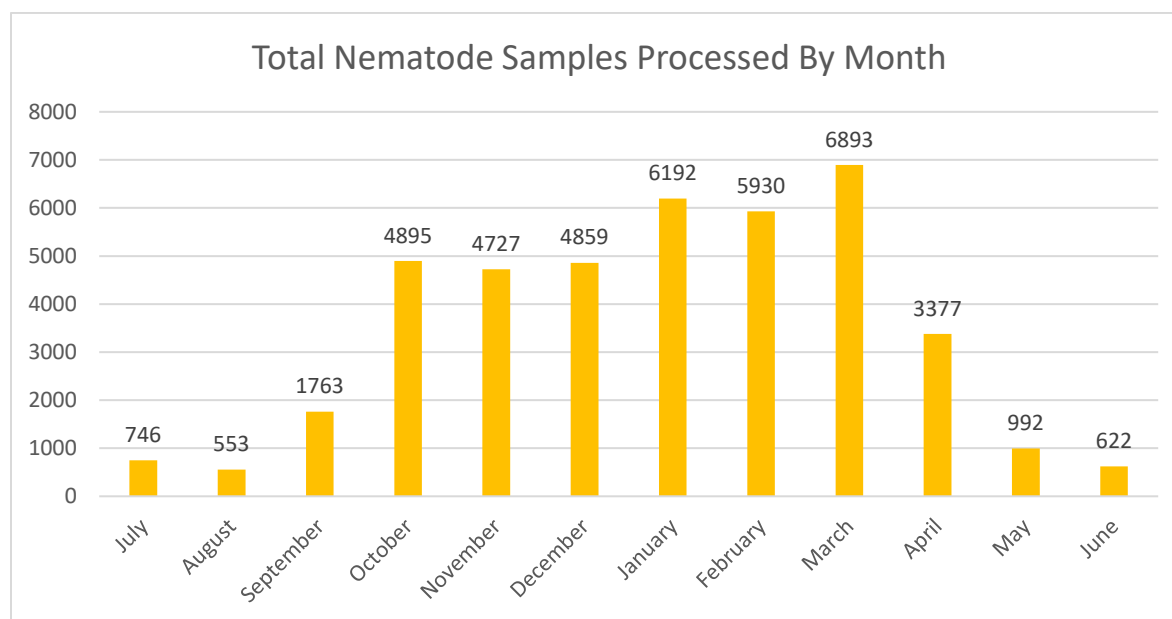


The Nematode Assay Section, under the direction of Weimin Ye, Ph.D., processed 41,549 samples and issued 5,082 reports in FY2024. Total sample volume was up about 9% compared to FY2023. Sample volume for pinewood nematodes remained low but predictive samples were up by nearly 4,000 samples. It was the 8th highest volume in the 44-year history of the lab.



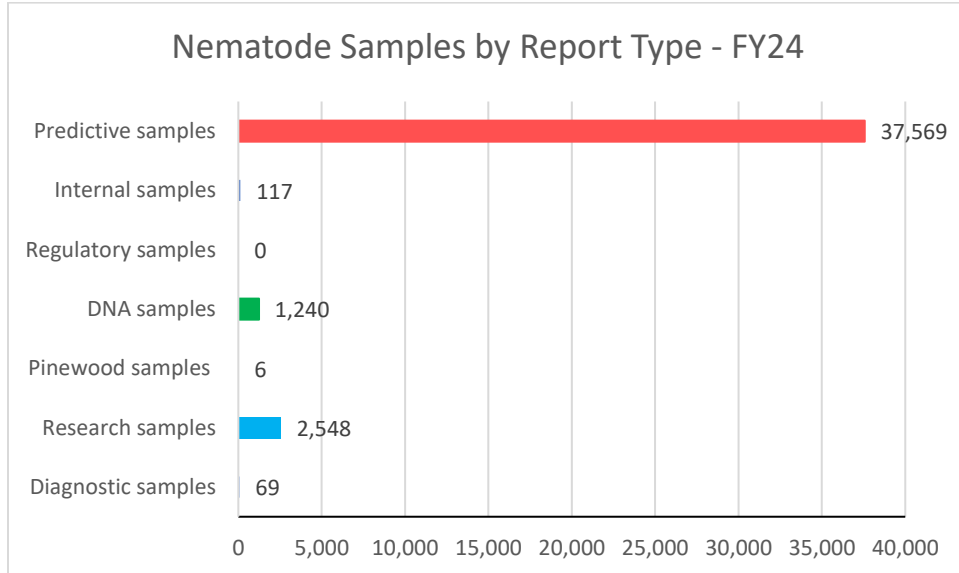


March was the busiest month in FY2024 for the Nematode Assay Lab, with 6,893 samples processed.

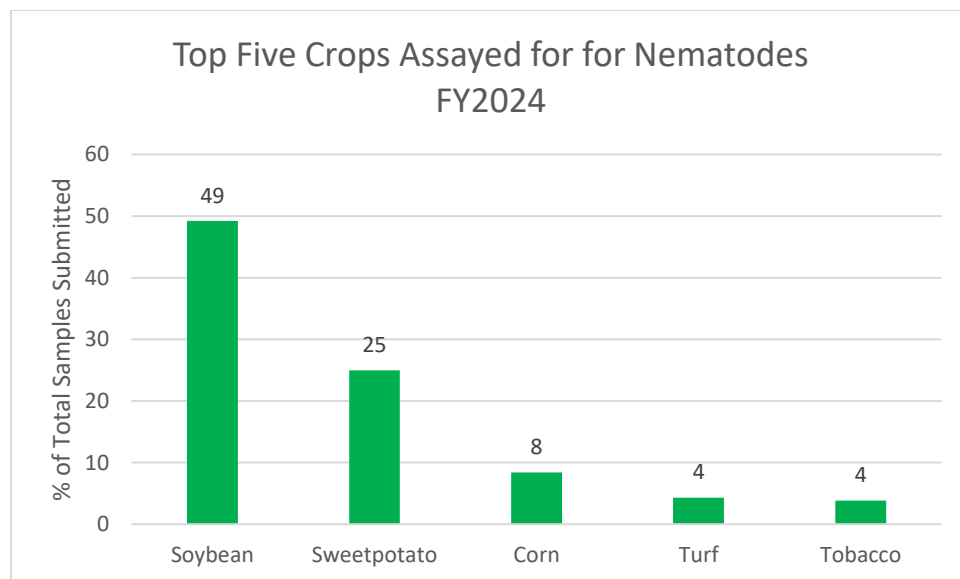


Most samples (37,569) were predictive in nature; other types included 2,548 research samples, 69 diagnostic samples, 117 internal samples, and 1,240 molecular diagnostic samples.

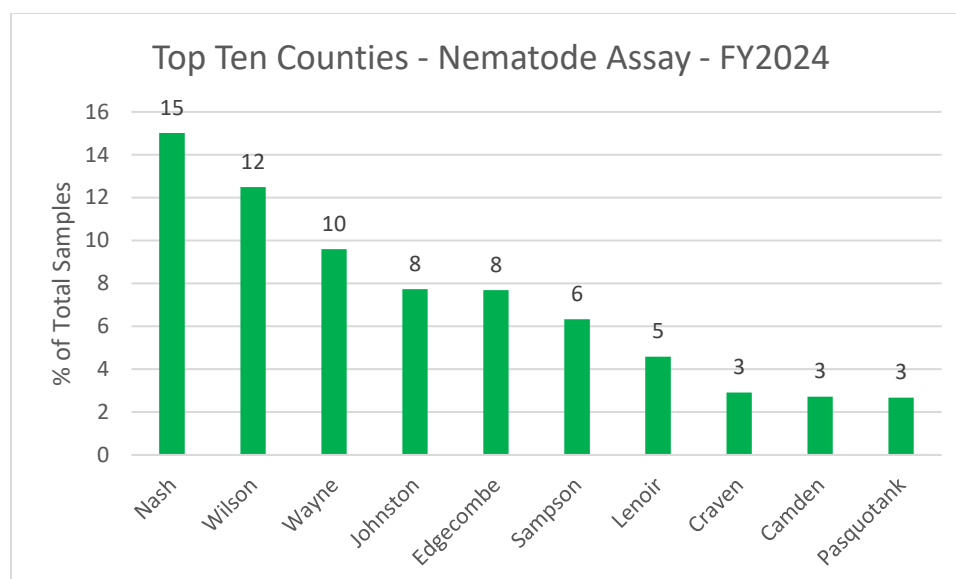
In addition, 6 pine wood samples were specifically tested for the presence of pinewood nematode, so shipments of lumber and wood products could be cleared for export from the United States. Pine wood nematode was detected in only 1 sample. Trade issues with China and new USDA sampling protocols have both had a negative impact on the number of pinewood samples submitted to the Nematode Assay Lab.



In FY2024, the crop with the largest number of submitted samples was soybean, with 20,445 samples (49% of total sample volume), followed by sweetpotato (10,375 samples, 25% of total). The top five counties submitting nematode samples for assay were Nash, Wilson, Wayne, Johnston and Edgecombe counties, with the following sample totals: 6,237; 5,188; 3,987; and 3,215 and 3,194, respectively.



The Nematode Assay Lab processed 100 samples for the NC State University's Plant Disease and Insect Clinic as part of a long-standing cooperative agreement.



Field Services

Field Services Section personnel, under the direction of Joe Hudyncia, Field Services Section Chief, made about 6,174 grower consults in FY2024, primarily to help diagnose nutrient and/or nematode problems. Regional agronomists assist landowners, growers, business and agency personnel, and homeowners with the use of Agronomic Division laboratory services for sound nutrient use and nematode management. Regional agronomists handled more than 189 inquiries regarding environmental issues in FY2024, primarily nutrient management plan guidance, regulatory changes or updates, and river basin oversight reviews.

Field Services personnel served on at least 26 agricultural commodity and agricultural organization boards, committees, and advisory groups during FY2024.

1. Corn Growers Association of North Carolina Board – Don Nicholson, Willie Howell
2. Fertilizer Cost Share Program Advisory Committee – Joe Hudyncia
3. Lee County Farm Bureau Board – Don Nicholson
4. Lee County Ag Advisory Board – Don Nicholson
5. Lee, Moore, Montgomery Counties FSA Board – Don Nicholson
6. Local Advisory Committee - Jordan Lake Nutrient Strategy – Anna-Beth Williams, Brad Thompson, Spencer Thomas
7. Local Advisory Committee - Falls Lake Nutrient Strategy – Anna-Beth Williams, Spencer Thomas
8. Local Advisory Committee – Neuse River Nutrient Strategy – Willie Howell, Spencer Thomas, Jeb Smith
9. Local Advisory Committee – Tar-Pamlico River Nutrient Strategy – Bright Ofori, Jeb Smith, Spencer Thomas
10. Haywood County Local Workgroup – Chris Leek

11. Jackson County Local Workgroup – Chris Leek
12. Madison County Local Workgroup – Chris Leek
13. Mountain Research Station Planning Committee – Chris Leek
14. NC Agricultural Foundation Board – Georgia Love
15. NC Farm Bureau Cotton Advisory Committee – Willie Howell
16. NC Farm Bureau Wildlife Working Group – Willie Howell
17. NC Peach Growers Society – Brad Thompson
18. NC Tomato Growers Association Board – Chris Leek
19. Robeson County Extension Field Crops Advisory Committee – Georgia Love (Chair)
20. Robeson County Extension Advisory Council – Georgia Love
21. Rowan County Extension Advisory Board – Daniel Overcash
22. Upper Mountain Fraser Fir Research Committee– Dwayne Tate
23. Wayne County Farm Bureau Board of Directors – Willie Howell
24. Wayne County Voluntary Agricultural District Committee – Willie Howell
25. Wilkes County/Roaring River Watershed Advisory Board – Dwayne Tate
26. SB1217 Interagency Guidance Committee – Willie Howell, Joe Hudyncia

Outreach Activities and Publications (Fiscal Year 2024)

Agronomic Division staff reached thousands of growers and agricultural professionals through a wide range of outreach activities during FY2024.

AdvanSix

The N.C. Department of Agriculture and Consumer Services (NCDA&CS) Agronomic Division is very grateful to AdvanSix for their sponsorship of a voucher program for analysis of plant samples for North Carolina growers. Growers can use plant analysis as a tool to improve their fertility management program, thereby maximizing yields and plant quality while safeguarding the environment from unnecessary fertilizer applications. Each year AdvanSix provides funding for the distribution of a limited number of vouchers to cover the cost of plant tissue analysis to introduce growers to this service. Regional agronomists play a key role in spreading the word about tissue testing and offering these free vouchers to interested growers. We are fortunate that this program continued in FY2024.

Laboratory Tours

In-house staff conducted at least 32 laboratory tours for farmers, master gardeners, agribusiness groups, scientists, and students, with at least 428 participants (Appendix A.). Information on agronomic services was disseminated through more than 40 educational exhibits displayed at farm shows, field days, training events and professional meetings (Appendix B).

Other Outreach

Outreach also included news releases and Facebook posts as found in Appendix C. Many presentations on agronomic services were made to master gardeners, growers, commodity

associations, conservation groups, and county and state organizations as well as to regional, national, and international meetings (Appendix D). At least seven external professional publications were published by staff in FY2024 (Appendix E).

Research (Fiscal Year 2024)

Division staff routinely engage in cooperative studies with university personnel, farmers, and industry specialists. Research conducted in FY2024 includes the following:

- 1) Occurrence and distribution of *Meloidogyne* spp. in sweetpotato fields in North Carolina with focus on *Meloidogyne enterolobii* – Dr. Weimin Ye (NCDA&CS).**

Safety Program (Calendar Year 2024)

The Agronomic Services Division maintains a very active, employee-led safety program. The Division has been recognized as a Public-Sector Star site by the North Carolina Department of Labor (NCDOL) for the past fifteen years. All employees serve on one of eight Star safety teams: Safety Inspection & Compliance; Safety Program & Policy; Safety Information & Communication; Job Safety Analysis; Housekeeping and Wellness; Ergonomics; Environmental Management, and Field Services.

The Agronomic Services Division prepared a detailed annual report on its 2024 safety program and submitted it to the N.C. Department of Labor (NCDOL) on January 27, 2024. (Reports are prepared according to the calendar year using NCDOL guidelines.)

APPENDIX A – Laboratory Tours Conducted During FY2024

Tour	Month	Date	Tour Group	Attendees
1	January	18	NC State CS 214 Class	36
2		19	Duke University Soil Fertility Program	6
3	February	5	Nuffield International Scholars	5
4		12	NC State Small Fruit Production Class	9
5	March	13	Clemson University - Farmaha's Soil Fertility Lab	3
6		18	Pitt Community College Landscape Mgmt. Students	15
7		18	NC State Small Fruit Production	9
8	April	15	St. David's High School Students	5
9		30	Jordanian Delegates	22
10	May	2	New Hanover County Extension Master Gardeners	15
11		8	Chatham County Extension Master Gardeners	39
12		9	Johnston County Extension Master Gardeners	21
13		14	Nash County Extension Master Gardeners	15
14		14	Lithos Carbon	7
15		29	Wayne County Extension Master Gardeners	15
16		30	Lithos Carbon, XPRIZE & EcoEngineers	8
17	June	4	University of Florida Nematology Graduate Students	9
18		11	New RA Lab Tours	3
19		24	NCSU Grad Student	1
20	July	12	NCSU BAE Summer Research Students	10
21		22	BIPOC Regenerative Internship Students	4
22	August	2	Seed Potato Certification Group	10
23		8	NC Cooperative Extension Horticulture Agents	12
24		12	Agri-Waste Technologies Summer Interns	15
25	September	11	Union County Extension Master Gardeners	16
26		18	Orange County Extension Master Gardeners	28
27		24	Extension Master Gardener College	22
28	October	9	Alamance County Master Gardeners	22
29		16	Surry County Master Gardeners	5
30		24	Dr. Patterson's CS214 Lab Class	18
31		24	Orange County Extension Master Gardeners	14
32	December	12	Rockingham County Extension Advisory Council	9
			Total	428

APPENDIX B – Educational Exhibits during FY2024

MEETING OR EVENT	DATE
Tobacco Field Day - Upper Coastal Plain Re. Stn.	July 12, 2023
Mountain Research Station Field Day - Waynesville	July 20, 2023
Five County Regional Beef Tour - Granville Co.	July 21, 2023
Northeast Ag Expo Field Day - Gates Co.	July 27, 2023
Blacklands Farm Managers Tour - Hyde Co.	August 2, 2023
Turfgrass Field Day - Lake Wheeler Field Labs	August 9, 2023
Mountain Horticulture Field Day - Henderson Co.	August 10, 2023
NC Christmas Tree Summer Meetings - Mitchell Co.	August 11-12, 2023
Annual Southwest Piedmont Corn and Soybean Field Day - Shelby	August 12, 2023
Chrome Field Day - Peanut Belt Res. Stn.	August 23, 2023
Peanut Field Day - Peanut Belt Res. Stn.	September 7, 2023
Cotton Field Day Upper Coastal Plain Re. Stn.	September 14, 2023
Produce Safety Field Day - Piedmont Research Stn.	September 26, 2023
58th NC Irrigation Society Meeting - Raleigh	November 2, 2023
NC Greenhouse Vegetable Growers Assoc. Annual Conf. - Guilford Co.	November 2-3, 2023
Southeast Strawberry Expo -Charlotte	November 8-10, 2023
Sustainable Agriculture Conference -Durham Convention Center	November 11-13, 2023
Annual Southeast Vegetable & Fruit Expo - Myrtle Beach, SC	November 26-28, 2023
NC Commodities Conference - Durham	January 11-12, 2024
Southeast Regional Fruit and Vegetable Conference - Savannah, SC	January 11-14, 2024
NC Blueberry Council 58 th Open House & Trade Show - Fayetteville	January 17-18, 2024
NC Sweetpotato Commission Annual Meeting - Goldsboro	January 18, 2024
NC Peach Growers' Society Annual Meeting - Moore Co.	January 23, 2024
Statesville Area Winter Grains Conference - Iredell Co.	January 24, 2024
Southern Farm Show - Raleigh	Jan. 31 – Feb. 2, 2024
NC Apple Growers Meeting/Southeast Winter Apple School - Hendersonville	February 6-7, 2024
Northeast Ag Expo Small Grains Field Day - Pasquotank Co.	February 7, 2024
26th Annual Eastern NC Landscape Conference - Rocky Mount	February 15, 2024
NC Pecan Growers Association Annual Meeting - Clinton	February 17, 2024
Northeast Piedmont Grain Production Meeting - Vance Co.	February 20, 2024
Winter Vegetable Conference/ NC Tomato Growers' Meeting - Asheville	February 21-22, 2024
NC Christmas Tree Association Annual Meeting - Boone	February 22-23, 2024
North American Raspberry and Blackberry Assoc. Annual Meeting - Wilmington	Feb. 26-28, 2024
NC Pork Conference - Raleigh	February 28-29, 2024
Organic Commodities & Livestock Conference - University of Mt. Olive	March 1, 2024
Weed Science Society of NC Annual Meeting - Raleigh	March 13, 2024
Surface Irrigation System Operators Training - Lake Wheeler Field Labs	March 20-21, 2024
Small Farms Week Educational Event Forum - NCA&T University	March 26, 2024
Land Application of Residuals Operators Training - Lake Wheeler Field Labs	April 10-11, 2024
Blueberry Field Day - Horticultural Crops Research Station - Castle Hayne	May 19, 2024

APPENDIX C – News Releases, Facebook Posts, and Interviews during FY2024

	News Release/Facebook Post/Interview	Date
1.	Soil lab Builds Greenhouse at Agronomic Services, <i>Facebook</i>	September 27, 2023
2.	Submit soil samples now to avoid delays and peak-season fees, David H. Hardy	October 24, 2023
2.	Georgia Love- 20 Years of Service, <i>Facebook</i>	March 3, 2024
3.	Dwayne Tate Retirement, <i>Facebook</i>	March 9, 2024
	Now is a great time to submit soil samples, Jagathi Kamalakanthan	March 28, 2024
4.	Don Nicholson Retirement, <i>Facebook</i>	March 23, 2024
5.	Submit Soil Samples, <i>Facebook</i>	April 19, 2024
6.	David Allgood- New Nematode Diagnostician, <i>Facebook</i>	May 30, 2024
7.	Troxler promotes Raleigh man to helm Agronomic Services Division, Andrea Ashby	May 14, 2024
8.	Dr. David Hardy Announced as New Division Director, <i>Facebook</i>	June 2, 2024

APPENDIX D – Presentations Made by Agronomic Division Staff during FY2024

Nematode Assay Section

- The annual meeting of Southeast Regional Fruit & Vegetable Conference (Savannah, GA, January 11-14, 2024)

Soil Testing Section

- Meeting with growers serviced by Impact Agronomics (Belhaven; January 30, 2024)
 - Presentation: *Soil Fertility Discussion*, D. Hardy.
- Mid-Atlantic Soil and Plant Analysis Working Group (Raleigh; February 20, 2024)
 - Presentation: *Mehlich 3-P Validation Corn Field Studies*, D. Hardy.

Field Services Section

- NCCES Soldiers to Agriculture Class (Cumberland Co; August 3, 2023)
 - Presentation: *NCD&CS Overview of Soils and Soil Fertility*, G. Love
- Western NC Strawberry Pre-plant Meeting (Burke Co; August 11, 2023)
 - Presentation: *NCD&CS Overview of Agronomic Field Services*, S. Dillon
- Sesame Field Day (Wayne Co; August 18, 2023)
 - Presentation: *On-Farm Management Decisions for Sesame Production*, W. Howell
- Extension Master Gardeners Meeting (Sampson Co; August 30, 2023)
 - Presentation: *Digging Into Soils and Soil Sampling*, W. Howell

- Davie County Cattlemen’s Association Field Day (Davie Co; September 12, 2023)
 - Presentation: *Pasture Walk - Fertility and Production*, D. Overcash
- Pecan Field Day (Bladen Co; September 16, 2023)
 - Presentation: *NCDA&CS Soils Lab Update, Soil and Tissue Sampling in Pecans*, G. Love
- Duplin Cooperative Extension Tailgate Talk (Duplin Co; September 18, 2023)
 - Presentation: *Using the Drone For Agronomics*, W. Howell
- Person County Cattlemen’s Association Meeting (Person Co; October 10, 2023)
 - Presentation: *Maximizing Forage Nutrition Through Soil Fertility*, A-B. Williams
- Warren County Cattlemen’s Association (Warren Co; October 23, 2023)
 - Presentation: *Maximizing Forage Nutrition Through Soil Fertility*, A-B. Williams
- NC DEQ Wastewater Continuing Education Meeting (Cumberland Co; November 8, 2023)
 - Presentation: *Fertility and Weed Control Issues in Sprayfields*, G. Love
- Caswell County Cattlemen’s Association (Warren Co; November 16, 2023)
 - Presentation: *Maximizing Forage Nutrition Through Soil Fertility*, A-B. Williams
- Animal Waste Workshop (Sampson Co; November 29, 2023)
 - Presentation: *OIC Animal Waste Training*, W. Howell
- Animal Waste Workshop (Duplin Co; December 1 & 12, 2023)
 - Presentation: *OIC Animal Waste Training and Drone Demonstration*, W. Howell
- NCSU AEE Class Guest Lecture (Virtual; December 5, 2023)
 - Presentation: *The Job of an Agronomist*, G. Love
- Hoke County Livestock Association Meeting (Hoke Co; December 12, 2023)
 - Presentation: *Weed Identification and Management in Hay Fields*, G. Love
- Extension Master Gardener Volunteers Meeting (Mecklenburg Co; January 16, 2024)
 - Presentation: *Soil Testing and Report Interpretation*, D. Overcash
- Jackson County Ag Resources Meeting (Jackson Co; January 22, 2024)
 - Presentation: *Agronomic Division Overview*, C. Leek
- Regional Agronomist Staff Meeting (Agronomics; January 24, 2024)
 - Presentation: *Drone Usage in Field Crop Management*, W. Howell
- Regional Agronomist Staff Meeting (Agronomics; January 24, 2024)
 - Presentation: *Greenhouse Tobacco Fertility and Management*, D. Nicholson
- NCCES Soldiers to Agriculture Class (Cumberland Co; January 25, 2024)
 - Presentation: *NCDA&CS Overview, Soils and Soil Fertility*, G. Love

- Extension Waste Management Training Class (Bladen Co; January 25, 2024)
 - Presentation: *Tools For the Plan: Waste, Soil, and Plant Analysis*, G. Love
- Extension Master Gardener Volunteers Meeting (Iredell Co; February 12, 2024)
 - Presentation: *Soil Testing and Report Interpretation*, D. Overcash
- Mid-Atlantic Soil Testing and Plant Analysis Work Group Meeting (Raleigh; February 20, 2024)
 - Presentation: *Drone Usage in Field Crop Management*, W. Howell
- Winter Vegetable Conference (Buncombe Co; Feb 21, 2024)
 - Presentation: *Agronomic Services Overview and Update*, C. Leek
- Extension Grain Meeting (Bladen Co; February 23, 2024)
 - Presentation: *P&K Soil Fertility Recommendations for Corn and Soybeans 2016-2023*, G. Love
- Extension Grain Meeting (Cumberland Co; February 29, 2024)
 - Presentation: *P&K Soil Fertility Recommendations for Corn and Soybeans 2016-2023*, G. Love
- Uwharrie Charter High School Soils Class (Randolph Co; March 5, 2024)
 - Presentation: *How To Collect a Soil Sample and Why It Is Important*, B. Thompson
- NC Muscadine Growers' Meeting (Cleveland Co; March 16, 2024)
 - Presentation: *NCDA&CS Overview of Agronomic Field Services*, S. Dillon
- Western North Carolina Beef Cattle Commission (Haywood Co; March 21, 2024)
 - Presentation: *Pasture and Hayground Fertility*, C. Leek
- Cooperative Extension Soil Health Seminar (Montgomery Co; April 5, 2024)
 - Presentation: *How to Collect a Soil Sample and Read a Soil Sample Report, and Using the PALS Interface*, B. Thompson
- NCCES Soldiers to Agriculture Class (Cumberland Co; April 11, 2024)
 - Presentation: *NCDA&CS Overview, Soils and Soil Fertility*, G. Love
- Land Application of Residuals Operator Training (Wake Co; April 11, 2024)
 - Presentation: *Collecting Soil Samples and Understanding the Soil Report*, B. Thompson
- Piedmont Forage Growers Conference (Randolph Co; April 17, 2024)
 - Presentation: *Soil Testing and Analysis Interpretation*, B. Thompson
- Stokes Early College (Stokes Co; April 18, 2024)
 - Presentation: *Soil Testing and Soil pH*, A-B. Williams
- Piedmont Farm School (Forsyth Co; April 19, 2024)
 - Presentation: *Agronomic Services Overview and How to Read a Soil Report*, D. Overcash
- NC Greenhouse Growers Conference (Randolph Co; June 5, 2024)
 - Presentation: *Understanding Nutrients and Nutrient to Plant relationships Within a Greenhouse Setting*, B. Thompson

APPENDIX E – External Publications of the Agronomic Division during FY2024

Soil Testing Section

1. Miller, S., S. Kulesza, L. Gatiboni, **D. Hardy**, & M. Sharara. Implications of current phosphorus levels for manure analysis in North Carolina. 2024. Soil Science Society of America. 88(4). 1374.
2. Tiecher, T, L. Gatiboni, D. Osmond, & **D. Hardy**. Soil sampling depth effect on critical test values of phosphorus for conservation agriculture. Crop, Forage and Turfgrass Management.
<https://doi.org/10.1002/cft2.20251>, 2023.

Nematode Assay Section

1. Monemi, S., M. Behdani, E. Mahdikhani-Moghadam, N. Amirzadi, M. R. Atighi, **W. Ye**, F. Jahanshahi Afshar, & M. Pedram. 2024. Data on four species of *Longidorus* Micoletzky, 1922 (Nematoda: Longidoridae) from southern and southeastern Iran, including description of a new species. Journal of Helminthology, 98, e42, 1–16.
2. Bonyak, H. C., M. C. Vann, **W. Ye**, R. S. Lewis, & A. M. Gorny. 2024. A two-year, multi-county survey of plant-parasitic nematodes in North Carolina flue-cured tobacco. Agronomy Journal, 1–12.
3. Yu, Q., J. Gu, & **W. Ye**. (2023). *Deladenus taedae* n. sp. (Nematoda: Neotylenchidae) in Loblolly pine (*Pinus taeda*) woods from USA intercepted in Ningbo, P. R. China. Nematology 25(10), 1115-1126.
4. Faske, T.R., J. D. Mueller, J. Ole Becker, E. Bernard, C. A. Bradley, J. P. Bond, J. Desaegeer, J. D. Eisenback, Z. J. Grabau, J. Hu, R. C. Kemeraït, A. Koehler, K. Lawrence, H. Mehl, R.E. Rudolph, E. Sikora, S. Thomas, N. R. Walker, T. Wheeler, J. A. Wrather, **W. Ye**, and L. Zhang. 2023. Summarized distribution of the southern root-knot nematode, *Meloidogyne incognita*, in field crops in the United States. Plant Health Progress. Published Online: 14 Nov 2023. <https://doi.org/10.1094/PHP-04-23-0031-BR>

Plant/Waste/Solution/Media Section

1. Veazie, P., **K. Hicks**, J. Holley, N. Eylands, N. Mattson, J. Boldt, D. Brewer, R. Lopez & B. Whipker. 2024. A data-driven approach for generating leaf tissue nutrient interpretation ranges for greenhouse lettuce. Horticultural Science. 59(3), 267.