



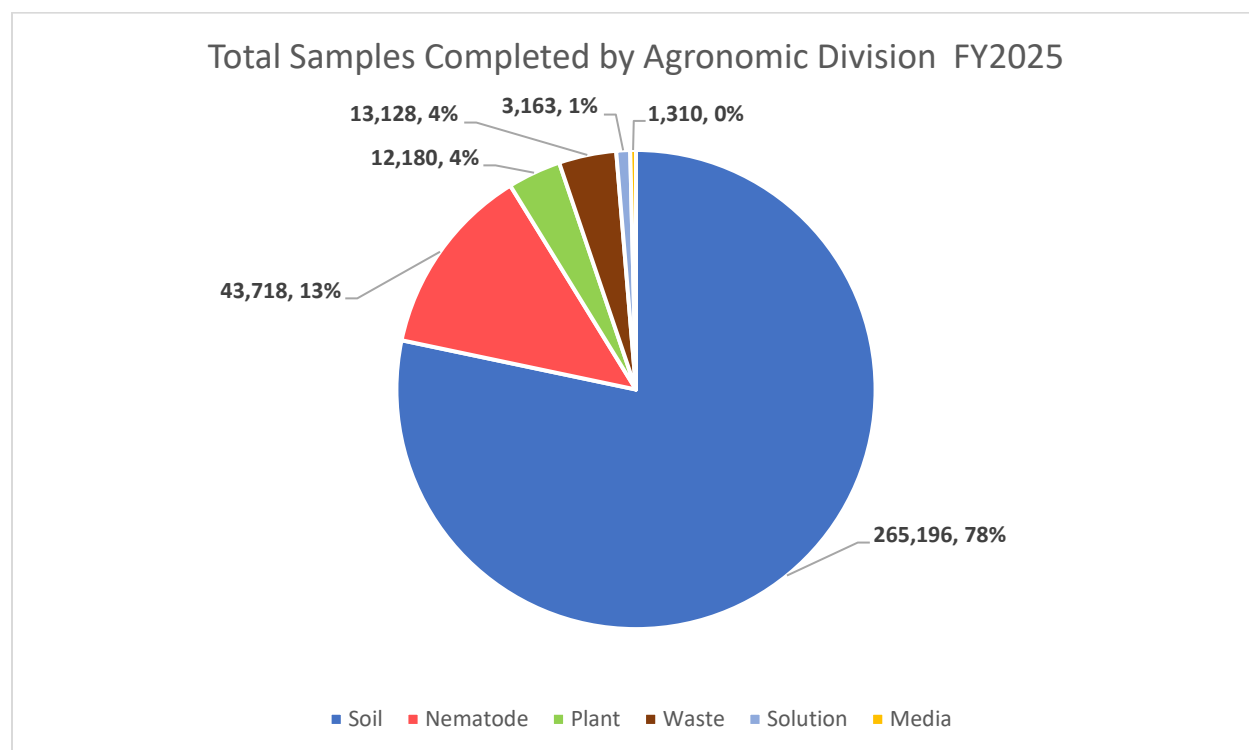
Agronomic Division —2025 Annual Report

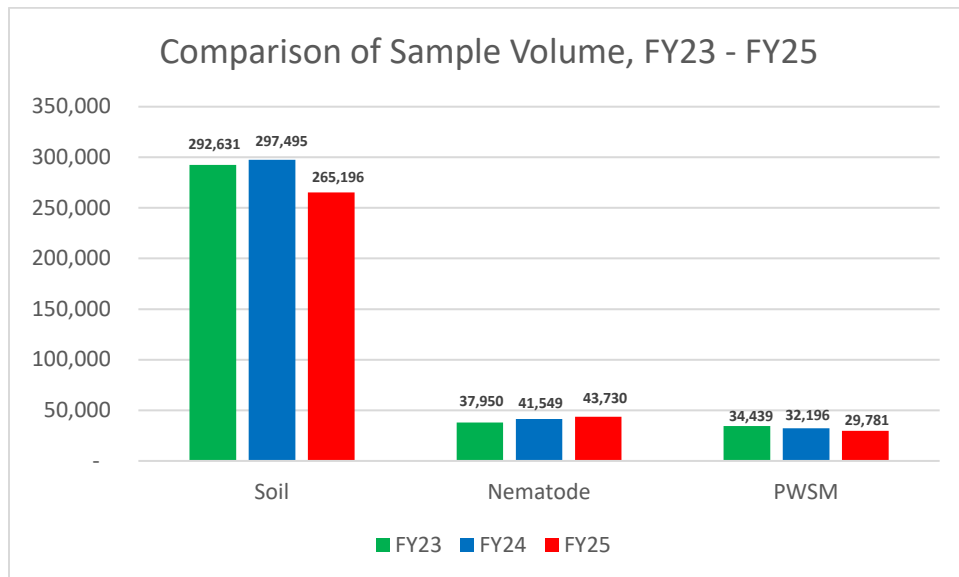
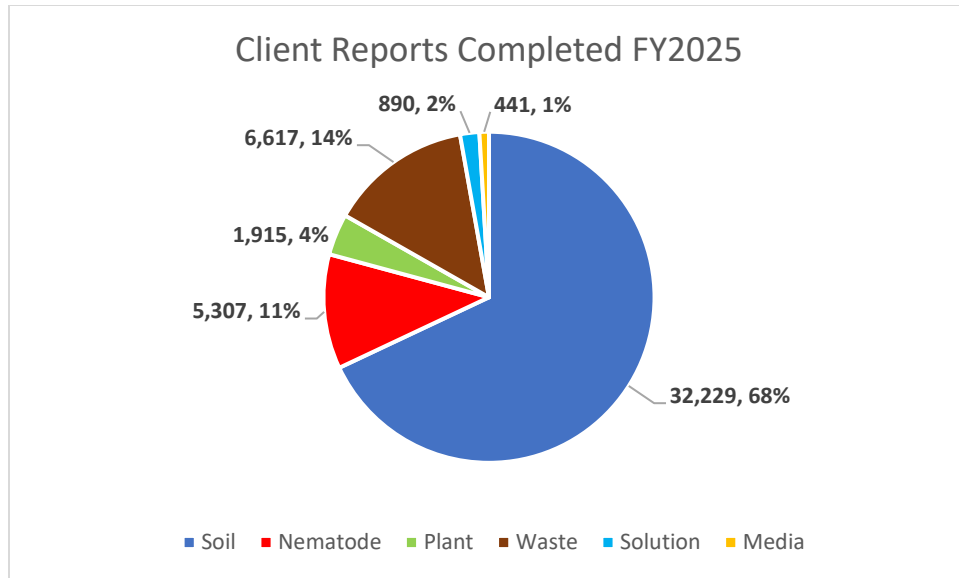
David H. Hardy, Ph.D., Director, (919) 664-1600

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 338,695 total samples during FY2025 (July 1, 2024 – June 30, 2025), which is approximately a 9% decrease over the previous year. Over 47,300 reports with test results and recommendations were prepared for clients during FY2025.



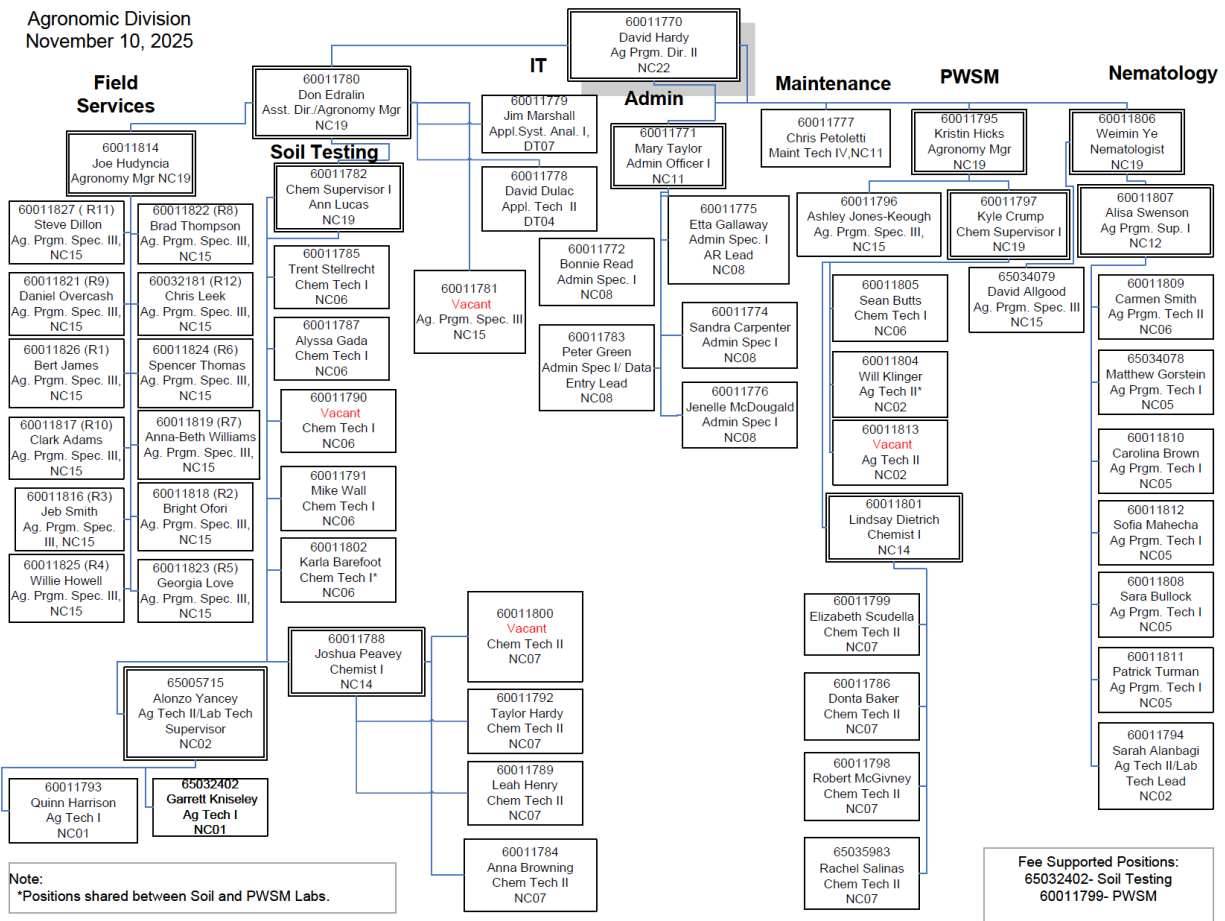


Milestones

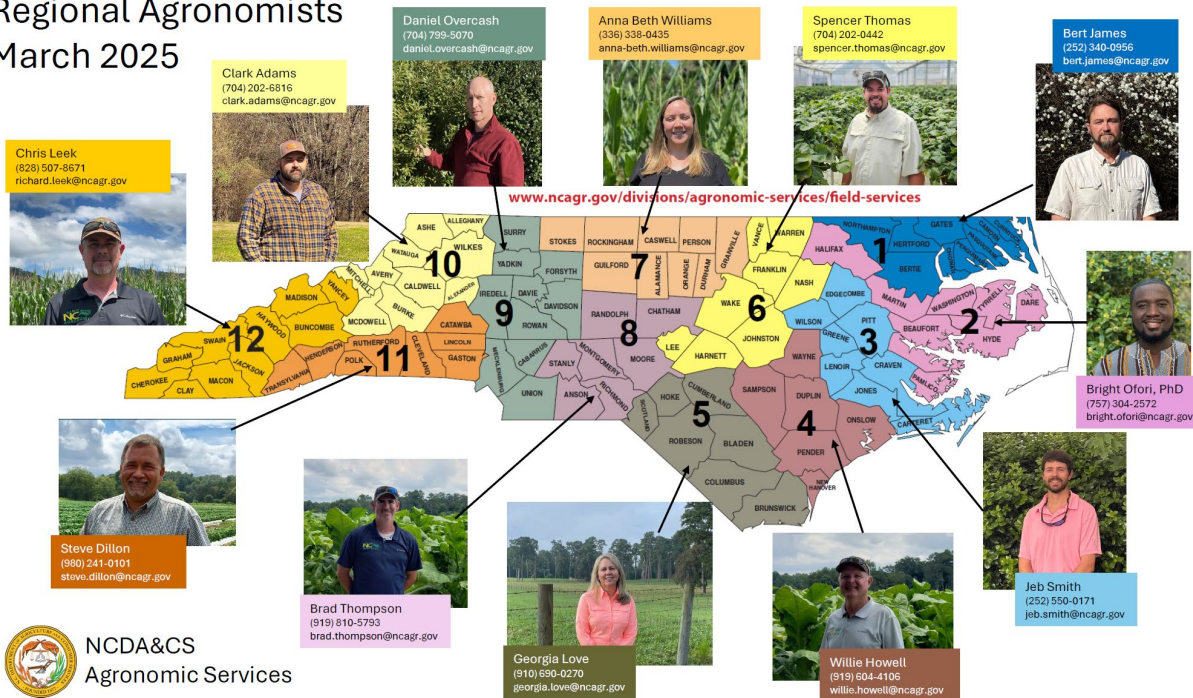
A major accomplishment for 2025 was successful bid award and start of the division's annex which is scheduled for completion in 2026. Lab fee increases were approved by the Board of Agriculture and the Office of Administrative Hearings. For some fees, changes have not occurred in 20 years. Fee changes were initiated to increase revenue for the division's operation due to lack of increased appropriations over many years.

Personnel

The Division had 60 full-time permanent positions during calendar year 2025: 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 (November 10, 2025) and the Field Services territorial map (March 5, 2025) follow.



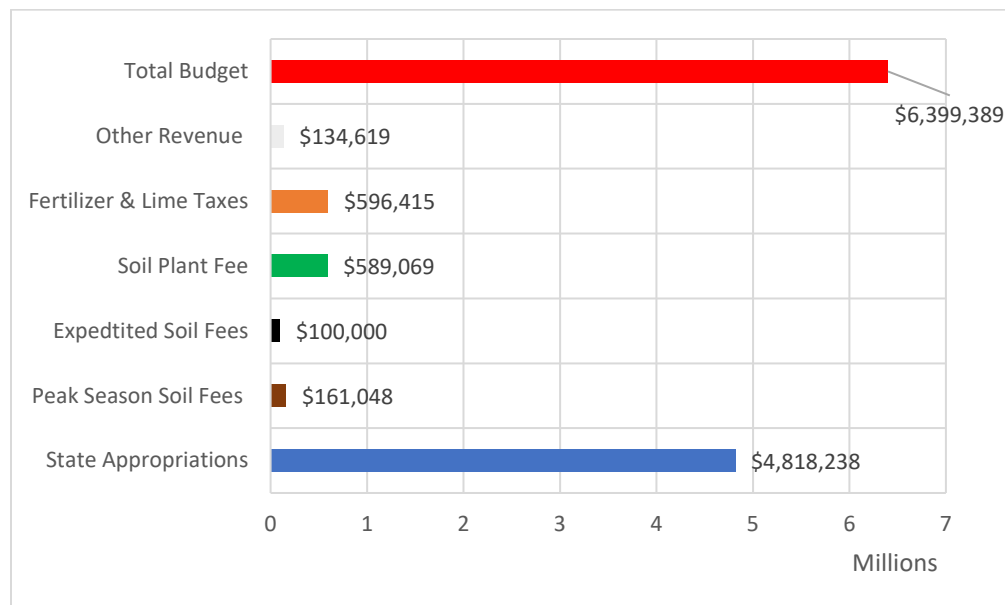
Regional Agronomists March 2025



Staff turnover during 2025 included several positions. Field Services became fully staffed for the first time in two years.

Funding

The Agronomic Services Division's expenditures for FY2025 were approximately \$6.4 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

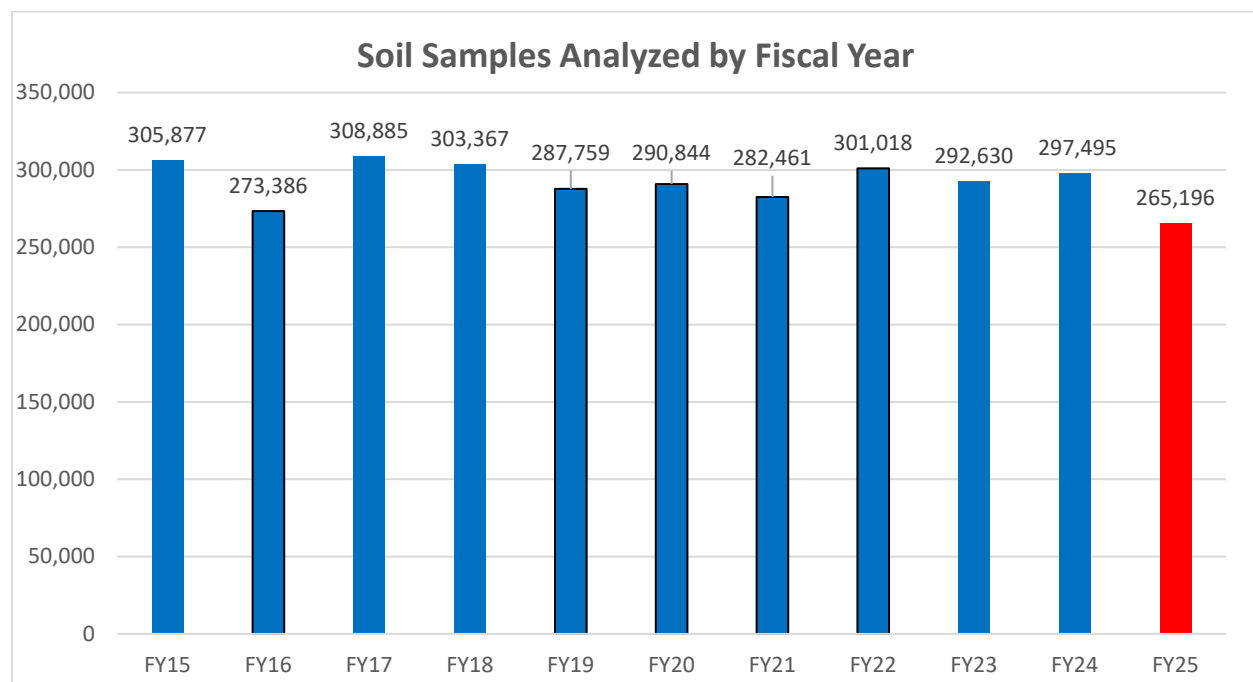
Quality Analysis/Quality Control

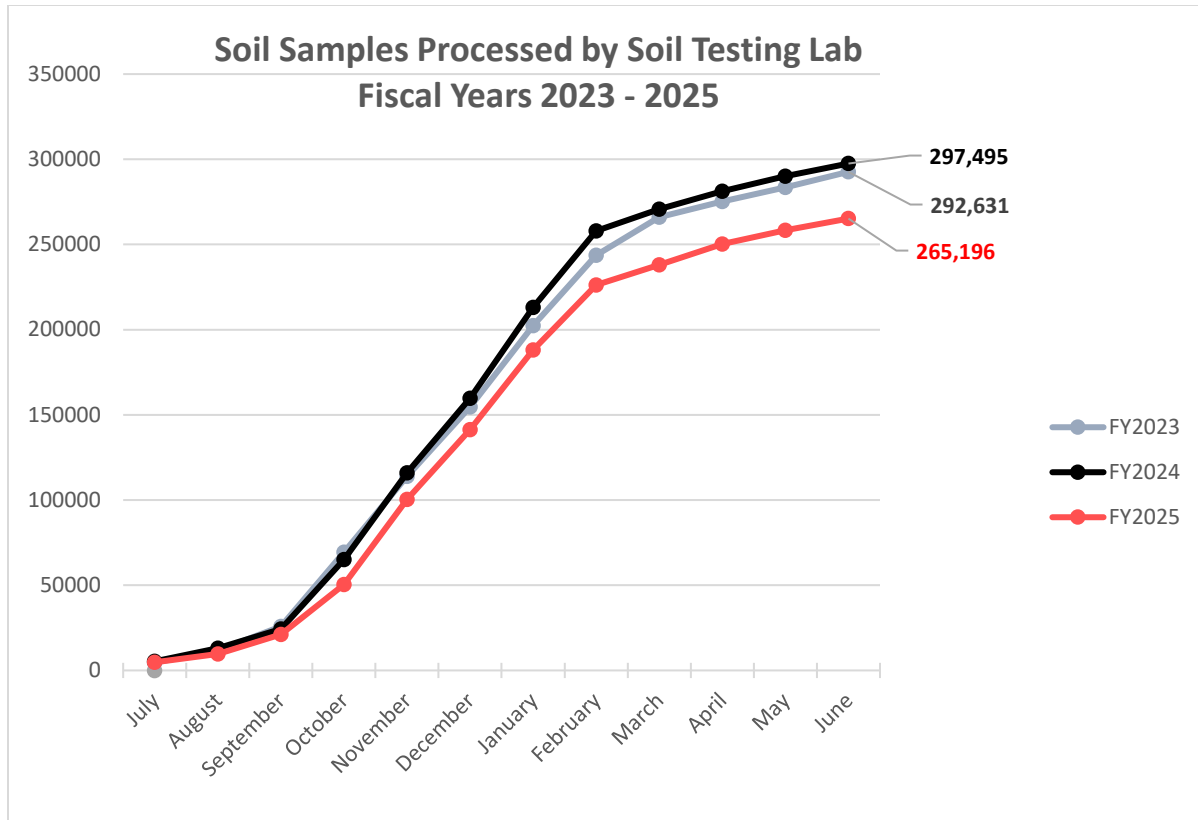
The Soil Testing and Plant/Waste/Solution/Media Advisory Laboratories participate in several external quality control programs. Annual analysis of unknown samples provided by an accredited proficiency testing provider is part of the laboratory recertification process by the Division of Environmental Quality's Division of Water Resources' Laboratory Certification Branch. The Agronomic Division passed its proficiency testing in 2025 and remains certified by DEQ through 2026.

The Agronomic Division also voluntarily participated in the following inter-laboratory proficiency testing and certification programs during 2025:

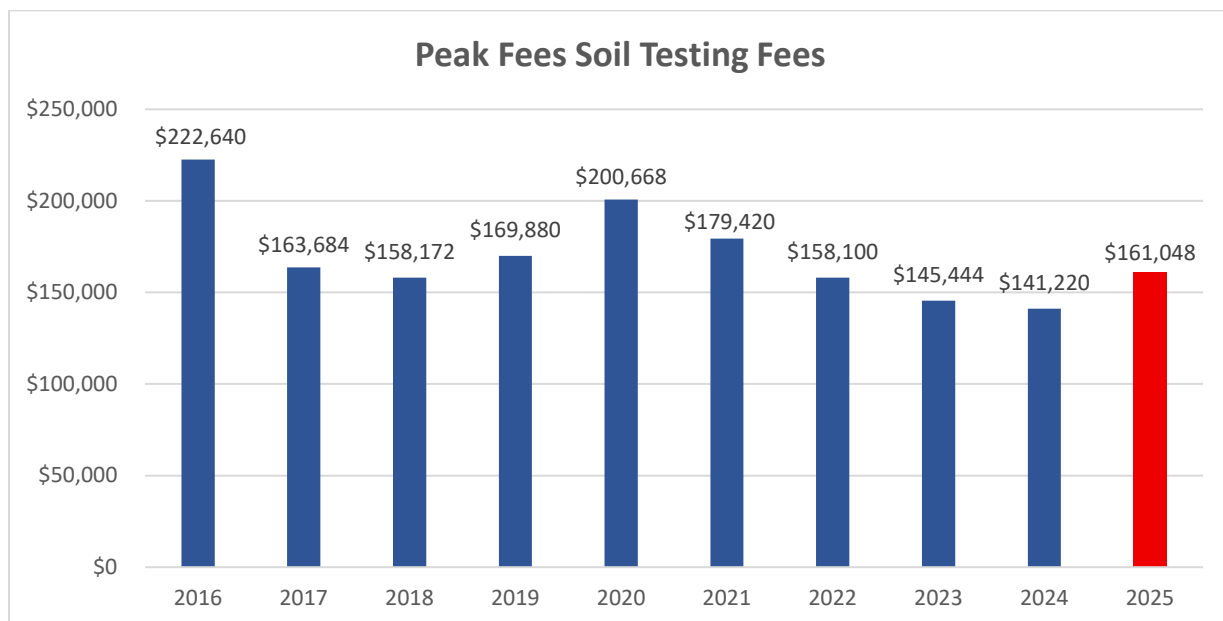
1. North American Proficiency Testing Program (NAPT) – soil analyses
2. Manure Analysis Program (MAP) – manure analyses
3. Agricultural Laboratory Proficiency program (ALP) – soil and plant tissue analyses

The **Soil Testing Section**, under the direction of Don Edralin, Ph.D., analyzed 265,196 soil samples in FY2025. A lower sample volume was likely impacted by a late soybean harvest. Sample distribution was as follows: 240,829 predictive; 16,385 predictive expedited samples; 1,675 diagnostic; 5,224 research; 977 internal; and 106 heavy metals. The Soil Testing Lab issued a total of 32,229 reports for fertilizer/lime recommendations. Total sample volume for FY2025 was down 11% compared to the previous fiscal year.

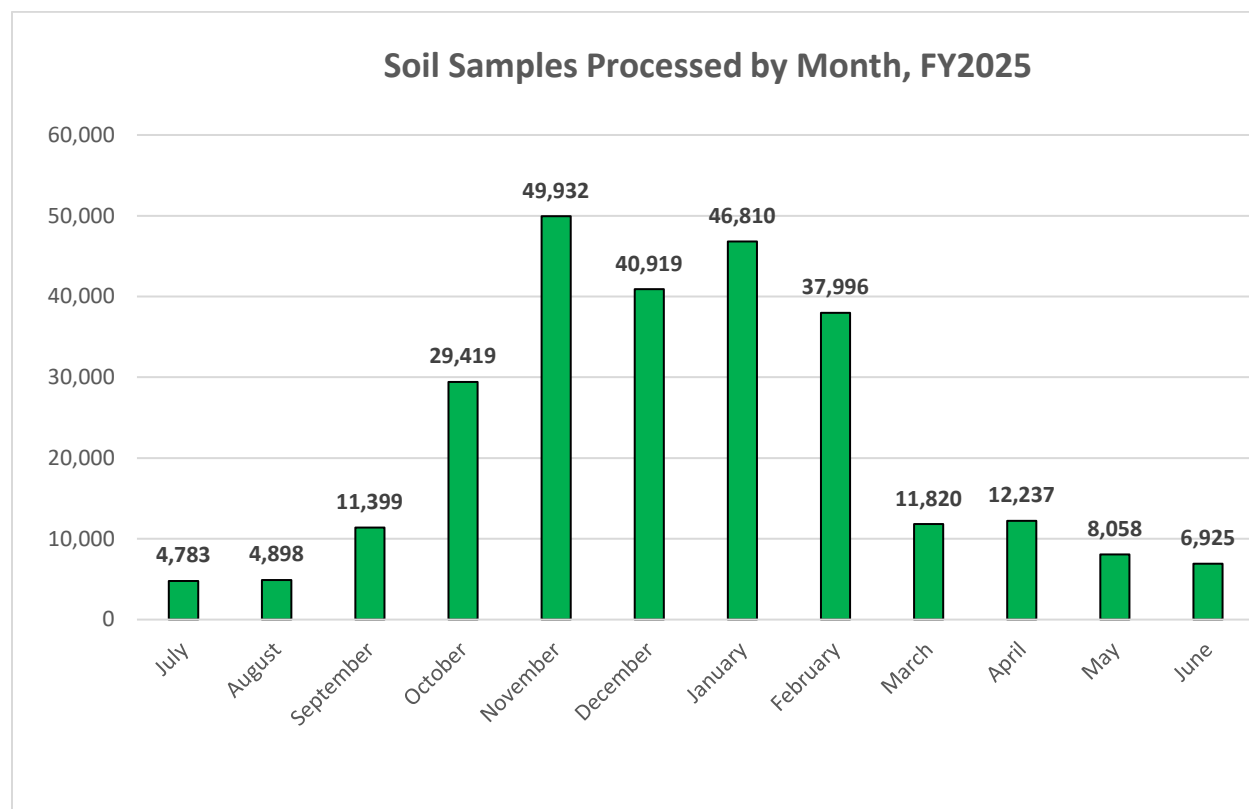




A total of \$161,048 was collected in peak-season soil testing fees (\$4.00/sample) for samples submitted December 1, 2024, through March 31, 2025. Peak-season samples (40,262) represented 15% of the total sample volume analyzed by the Soil Testing Lab.



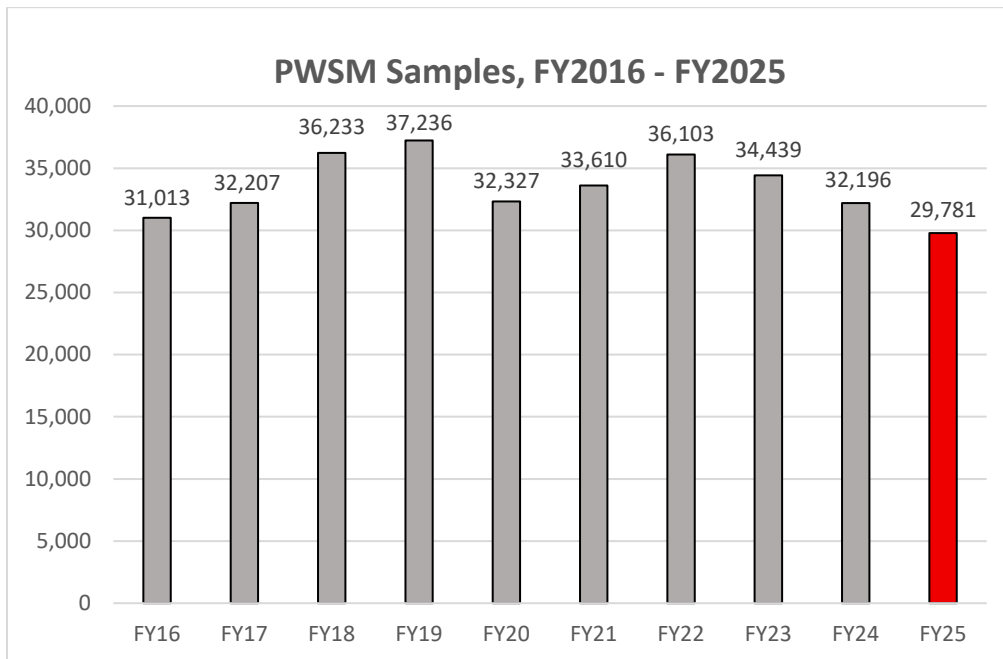
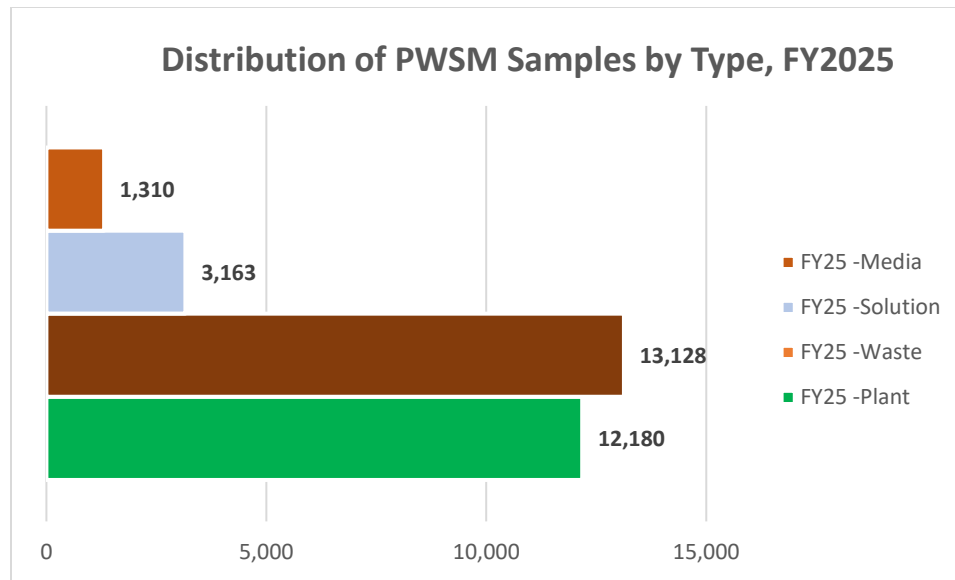
As seen below, the peak-season fee achieved its intended purpose, to distribute the workload for the Soil Testing Lab more evenly across the year. November 2024 was the busiest month of FY2025, with 49,932 soil samples analyzed.



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 FY2025, 16,385 samples (~6% of total sample volume) were submitted to the Soil Testing Laboratory in expedited shippers.

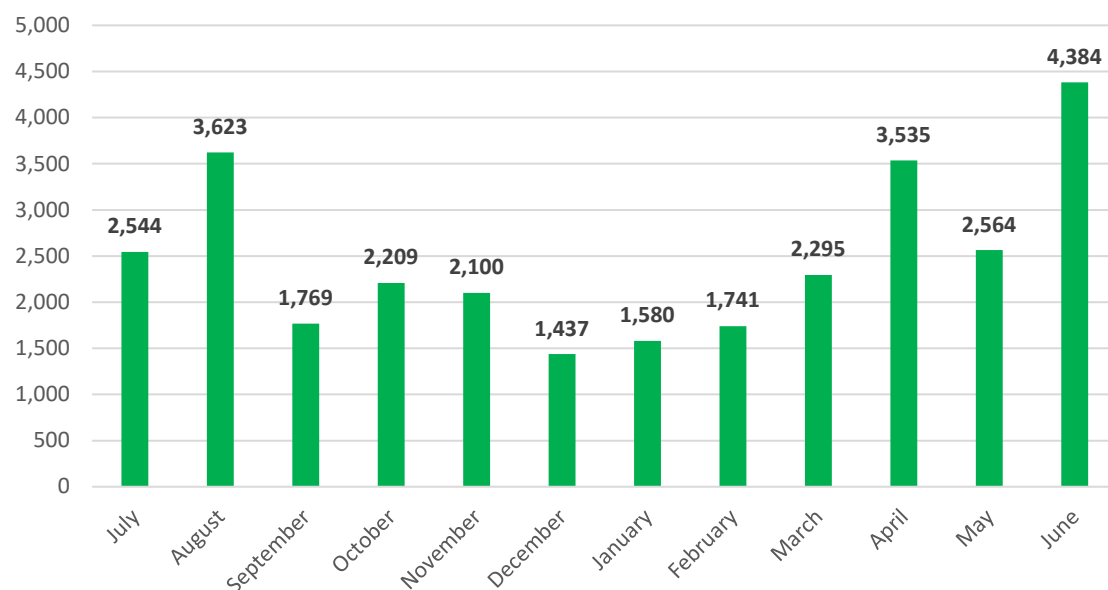
In general, the sample turnaround times were very acceptable for growers during FY2025. Soil sample turnaround for predictive samples plateaued at ten weeks on November 27, 2024, but then dropped back down to two weeks by February 3, 2025.

The **Plant/Waste/Solution/Media (PWSM) Section**, under the direction of Kristin Hicks, Ph.D., issued a total of 9,863 reports during FY2025. These reports gave recommendations for 12,180 (41%) plant tissue samples; 13,128 (44%) waste samples; 3,163 (11%) solution samples; and 1,310 (4%) soilless media samples in FY2025. 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.

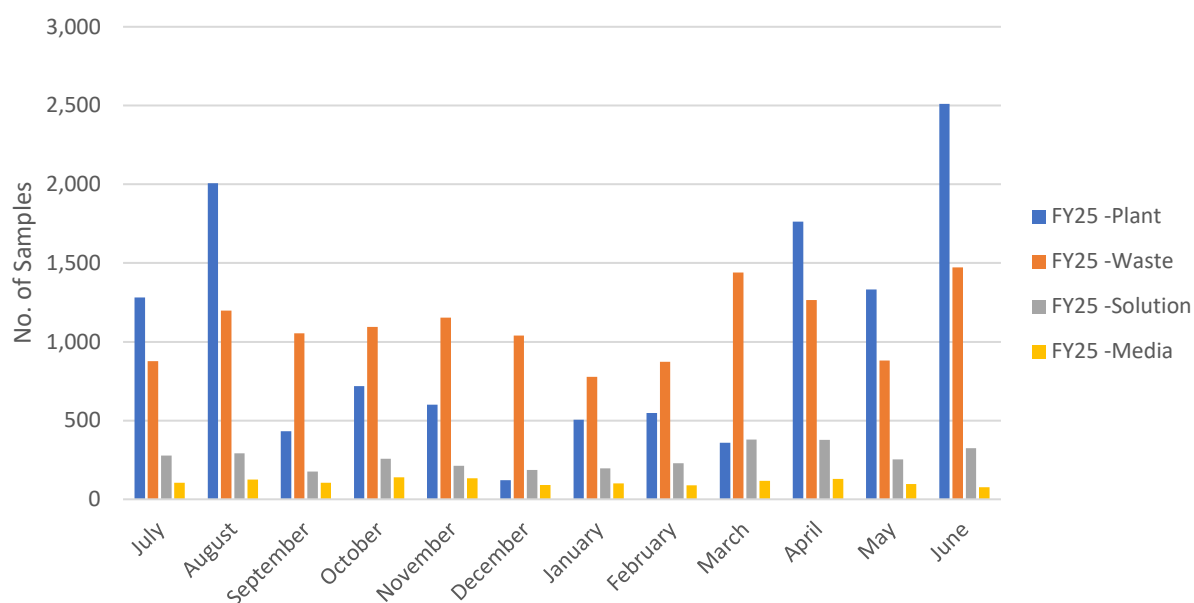


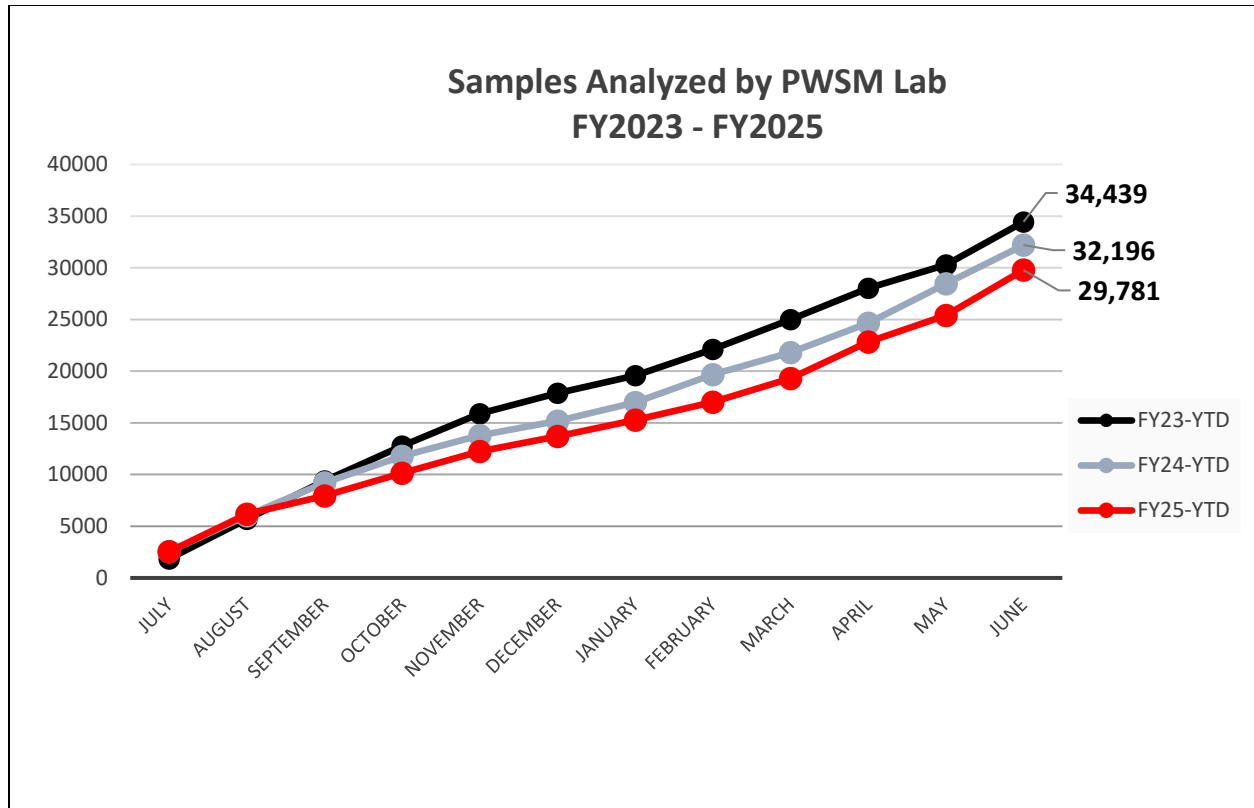
The busiest month for the PWSM Section was June of the fiscal year, with 4,384 samples analyzed. In total, 29,781 samples were processed during FY2025.

Total Plant, Waste, Solution and Media Samples Analyzed Monthly - FY2025

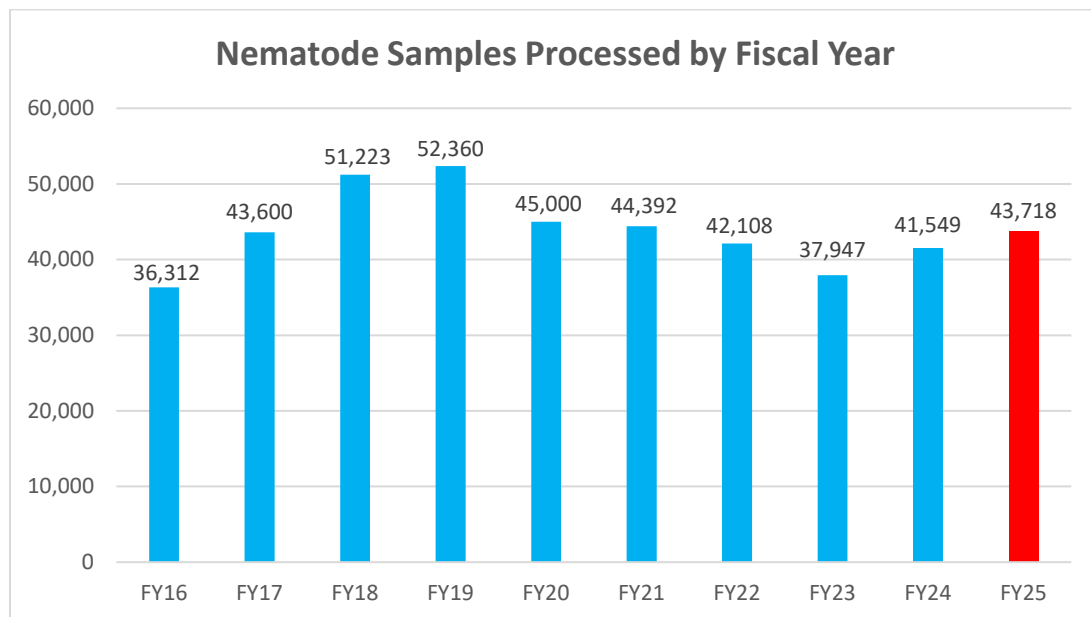


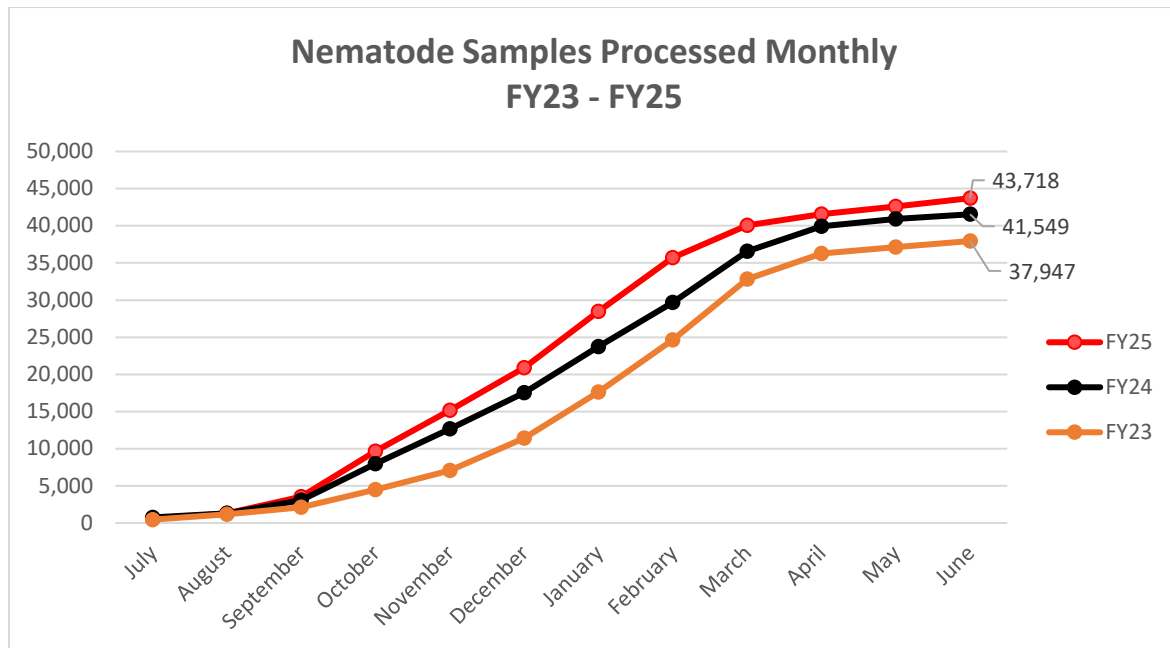
Distribution of PWSM Samples for FY2025



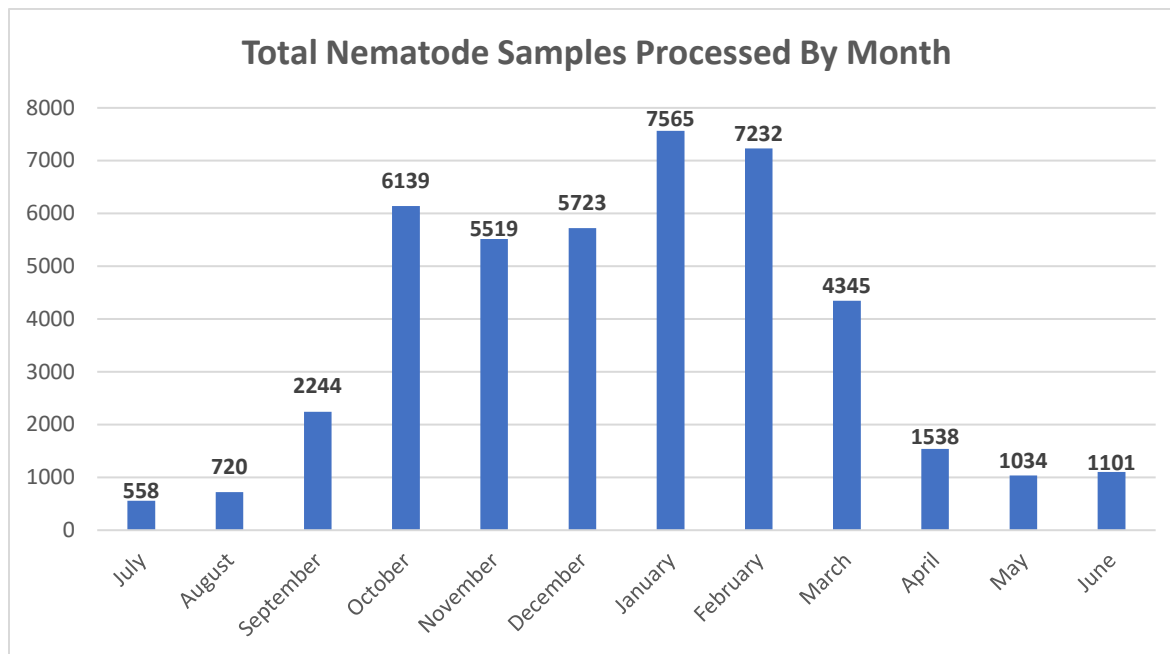


The Nematode Assay Section, under the direction of Weimin Ye, Ph.D., processed 43,718 samples and issued 5,307 reports in FY2025. Total sample volume was up about 5% compared to FY2024 and it was the 8th highest volume in the 45-year history of the lab. Sample volume for pinewood nematodes remained low due to low exports of wood products.



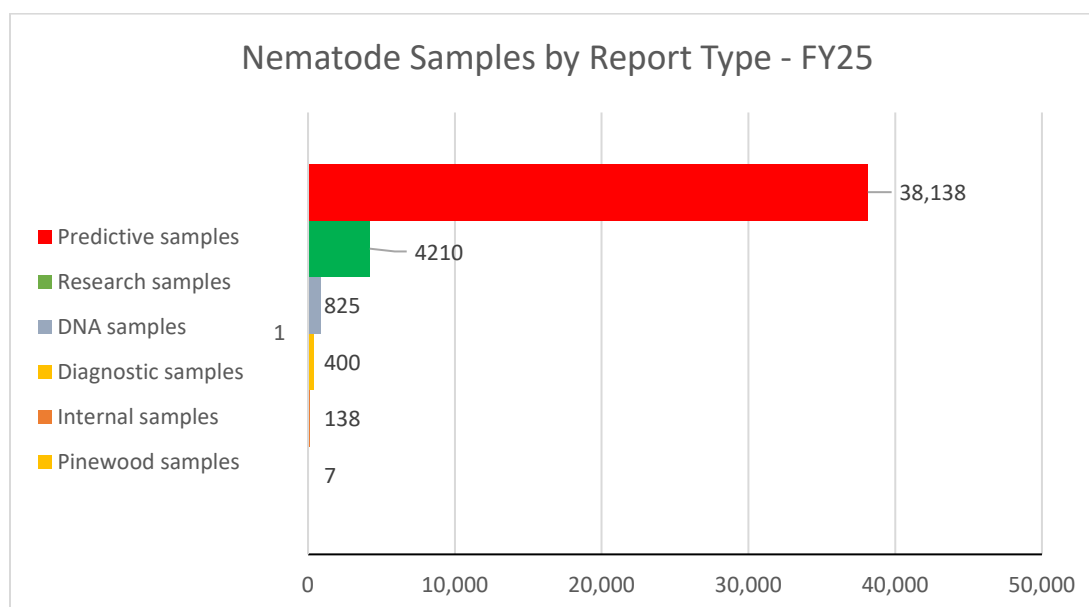


January was the busiest month in FY2025 for the Nematode Assay Lab, with 7,565 samples processed.

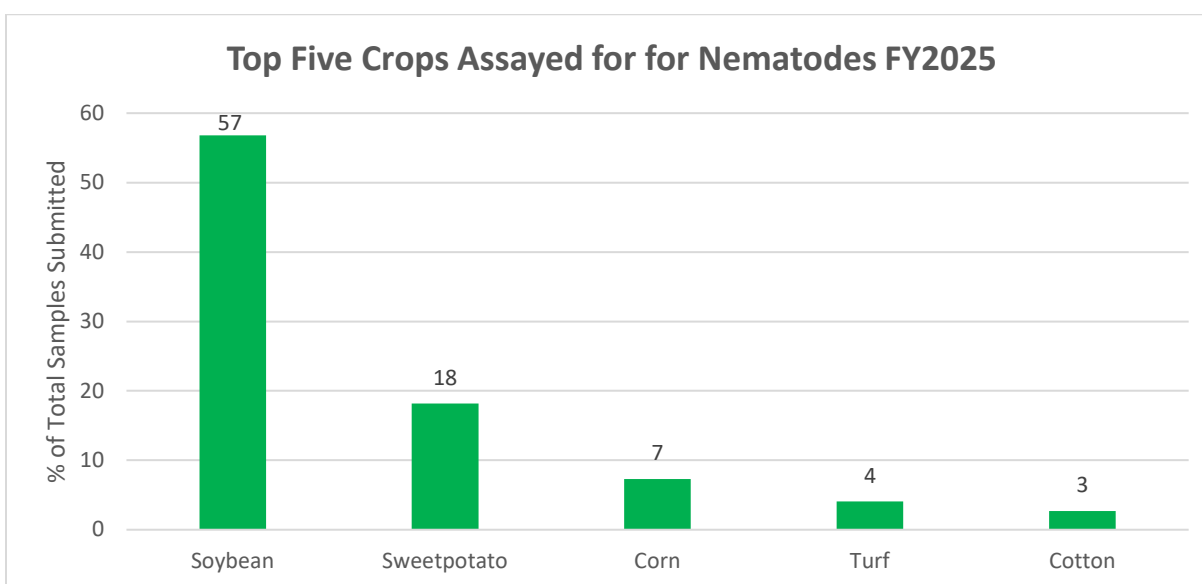


Most samples (38,138) were predictive in nature; other types included 4,210 research samples, 400 diagnostic samples, 138 internal samples, and 825 molecular diagnostic samples.

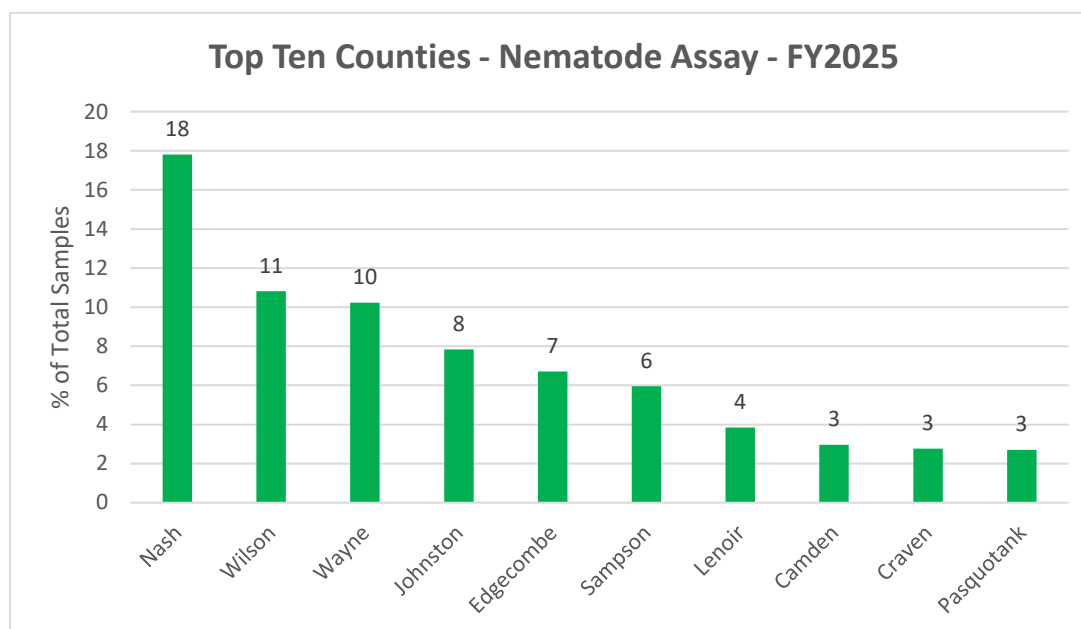
Seven pine wood samples were specifically tested for the presence of pinewood nematode, so shipments of lumber and wood products could be cleared for export from the United States. **Pine wood nematode was detected in only 1 sample.** Trade issues with China and new USDA sampling protocols have both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



In FY2025, the crop with the largest number of submitted samples was soybean, with 24,824 samples (57% of total sample volume), followed by sweetpotato (7,951 samples, 18% of total). The top five counties submitting nematode samples for assay were Nash, Wilson, Wayne, Johnston and Edgecombe counties, with the following sample totals: 7,782; 4,728; 4,474; and 3,424 and 2,931, 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 6,599 grower consultations in FY2025 which was a 7% increase over last year. Contacts were 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 444 inquiries regarding environmental issues in FY2025. This is a 234% increase over last year with much of this being due to assessing / working with growers in western NC that were impacted by Hurricane Helene; there were 27 counties that were declared presidential disaster counties. Adverse weather extensively impacted other areas of the state, essentially causing losses statewide. Field Services personnel served on at least 23 agricultural commodity and agricultural organization boards, committees, and advisory groups during FY2025.

1. Alexander County Schools-Catawba Valley Community College Career and Technical Education Advisory Board – Clark Adams
2. Corn Growers Association of North Carolina Board – Willie Howell
3. Fertilizer Cost Share Program Advisory Committee – Joe Hudyncia
4. Local Advisory Committee - Jordan Lake Nutrient Strategy – Anna-Beth Williams, Brad Thompson, Spencer Thomas
5. Local Advisory Committee - Falls Lake Nutrient Strategy – Anna-Beth Williams, Spencer Thomas

6. Local Advisory Committee – Neuse River Nutrient Strategy – Willie Howell, Spencer Thomas, Jeb Smith
7. Local Advisory Committee – Tar-Pamlico River Nutrient Strategy – Bright Ofori, Jeb Smith, Spencer Thomas
8. Haywood County Local Workgroup – Chris Leek
9. High Rock Lake Watershed Ag Nutrient Group - Clark Adams
10. Jackson County Local Workgroup – Chris Leek
11. Madison County Local Workgroup – Chris Leek
12. Mountain Research Station Planning Committee – Chris Leek
13. NC Agricultural Foundation Board – Georgia Love
14. NC Farm Bureau Cotton Advisory Committee – Willie Howell
15. NC Farm Bureau Wildlife Working Group – Willie Howell
16. NC Peach Growers Society Board – Brad Thompson
17. NC Tomato Growers Association Board – Chris Leek
18. Robeson County Extension Field Crops Advisory Committee – Georgia Love (Chair)
19. Robeson County Extension Advisory Council – Georgia Love
20. Rowan County Extension Advisory Board – Daniel Overcash
21. Wayne County Farm Bureau Board of Directors – Willie Howell
22. Wayne County Voluntary Agricultural District Committee – Willie Howell
23. SB1217 Interagency Guidance Committee – Willie Howell, Joe Hudyncia

Outreach Activities and Publications (Fiscal Year 2025)

Agronomic Division staff reached thousands of growers and agricultural professionals through a wide range of outreach activities during FY2025.

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 FY2025.

Laboratory Tours

In-house staff conducted at least 25 laboratory tours for farmers, master gardeners, agribusiness groups, scientists, and students, with at least 421 participants (Appendix A.). Information on agronomic services was disseminated through more than 30 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 FY2025 (Appendix E).

Research (Fiscal Year 2025)

Division staff routinely engage in cooperative studies with university personnel, farmers, and industry specialists. Research conducted in FY2025 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 FY2025

Tour	Month	Date	Tour Group	Attendees
1	July	12	NCSU BAE Summer Research Students	10
2	July	22	BIPOC Regenerative Internship Students	4
3	August	2	Seed Potato Certification Group	10
4	August	8	NC Cooperative Extension Horticulture Agents	12
5	August	12	Agri-Waste Technologies Summer Interns	15
6	September	11	Union County Extension Master Gardener Volunteers	16
7	September	18	Orange Co Extension Master Gardener Volunteers	28
8	September	24	Extension Master Gardner College	22
9	October	9	Alamance County Master Gardeners	22
10	October	16	Surry County Master Gardeners	5
11	October	24	Dr. Patterson's CS214 Lab Class	18
12	October	24	Orange Co Extension Master Gardener Volunteers	14
13	December	12	Rockingham County Extension Advisory Council	9
14	January	31	Duke Soil Fertility Fellowship	5
15	February	17	Guilford County Extension Master Gardeners	15
16	February	27	Dr. Patterson's CS214 Class	29
17	March	4	North Carolina Crop Association Group	9
18	March	11	Pitt Community College Horticulture & Turf Management	11
19	March	20	Durham County Extension Master Gardeners	28
20	April	10	Master Gardener Volunteers Surry & Stokes Co.	11
21	April	17	Robeson County Ext. Master Gardener Volunteers	11
22	May	8	Johnston County Ext. Master Gardeners	18
23	June	4	Moldovan Delegation with CALS	5
24	June	13	ISSPA Conference	80
25	June	17	Sampson Community College- SEED Academy	14
Total				421

APPENDIX B – Field Services Educational Exhibits during FY2025 (July 2024 – June 2025).

<u>Meeting or Event</u>	<u>Location</u>	<u>Date</u>
Peach Field Day	Jackson Springs	July 16
Tobacco Field Day	Kinston	July 17
Mountain Research Station Field Day	Waynesville	July 18
NC State Fiber Hemp Field Day	Kinston	July 24
Northeast Ag Expo	Hertford	July 25
New & Emerging Crops Field Day	Clinton	August 1
Blacklands Farm Managers Tour	Plymouth	August 7
Mountain Hort. Crops Field Day and 75th Anniversary	Mills River	August 15
Turfgrass Field Day	Raleigh	August 14
Chrome Field Day	Lewiston	August 21
2024 NCSU Coastal Plain Sesame Field Day	Clinton	August 29
Sandhills RS Turfgrass Field Day	Jackson Springs	September 4
NC Sweetpotato Field Day	Clinton	October 10
NC Greenhouse Vegetable Growers Conference	Greensboro	October 3
Sustainable Agriculture Conference	Durham	November 2 - 3
Southeast Strawberry Expo	Atlantic Beach	November 13 - 14
Annual SE Vegetable and Fruit Expo	Myrtle Beach	December 3 - 4
NC Assoc. Soil & Water Conserv. Districts Annual Mtg	Durham	January 5 - 7
SE Regional Fruit & Vegetable Conference	Savannah, GA	January 9-11
NC Blueberry Council 58th Open House & Trade Show	Fayetteville	January 14-15
NC Sweetpotato Commission Annual Mtg	Goldsboro	January 16
NC Peach Growers Society Annual Mtg	Carthage	January 28
Southern Farm Show	Raleigh	February 5 - 7
SE Winter Apple School	Hendersonville	February 4 - 5
27th Annual Eastern NC Landscape Conference	Rocky Mount	February 11
NC Pecan Growers Association Annual Mtg	Johnston Co.	February 15
NC Caneberry Association Annual Meeting	Asheville	February 19
Winter Vegetable Conference/NC Tomato Growers Mtg	Asheville	February 19 - 20
NC Christmas Tree Association Winter Mtg	Boone	February 20 - 21
Organic Commodities & Livestock Conference	Greensboro	March 3
Surface Irrigation System Operators Training	Raleigh	March 19 - 20
Small Farms Week educational event forum	Greensboro	March 25
Land Application of Residuals Operator Training School	Raleigh	April 9 - 10
Small Farm Field Day	Guilford	June 20

APPENDIX C – News Releases, Facebook Posts, and Interviews during FY2025.

News Release/Facebook Post/Interview	Date
Meet Bright Ofori- New RA	7/5/2024
Meet Spencer Thomas- new RA	7/11/2024
Agronomic Services hires 3 new Regional Agronomists	7/16/2025
Meet Jeb Smith- New RA	7/18/2024
Jordanian Tour Group	8/11/2024
Patrick Turman- Employee of the month	8/12/2025
Star Safety Recertification	8/15/2024
Eaddy Building Closed for Repairs	9/4/2024
Fall has begun- Soil Testing	10/3/2024
Soil Management Recommendations for Hurricane-impacted Western NC	10/11/2024
DEQ vs Agronomic Services- Soil testing after Helene	10/14/2024
"A few weeks before peak season"	11/1/2024
Submit Soil Samples to Avoid Peak Season Fees	11/8/2024
One Week until Peak Season	11/19/2024
Check Turnaround Times on PALS	1/22/2025
Now is the Time for Tobacco Float Bed Water Testing	2/12/2025
Drone use in Agronomic Services	2/22/2025
Tobacco Floatbed Solution Testing	2/25/2025
NCDA&CS Offers Free Agronomic Services for Western NC Growers	2/25/2025
Have your Floatbed Water tested!	3/5/2025
No Lab Fees for western NC in Presidential Disaster Counties	3/13/2025
Meet Clark Adams	4/7/2025
Restorative Lawn Success	4/7/2025
Upcoming Strawberry Season	4/10/2025
Berry Sweet - Strawberry Season	5/5/2025
Agronomic Testing (radio plug)	5/22/2025
ISSPA promotion – co-hosted by NCDA Agronomic Services	5/31/2025
Send Soil Samples - Commissioner Troxler	6/17/2025

APPENDIX D – Presentations Made by Agronomic Division Staff during FY2025**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

- Extension Master Gardener Soils Class (Cumberland Co; July 12, 2024)
 - Presentation: *Soils and Soil Fertility*, G. Love
- WUNC Public Radio “Due South” (July 23, 2024)
 - Radio Interview: *Interview with Leoneda Inge on Drought Effects on Crops*, G. Love
- NCCES Soldiers to Agriculture Class (Cumberland Co; August 8, 2024)
 - Presentation: *NCDA&CS Overview, Soils and Soil Fertility*, G. Love
- Regional Strawberry Pre-Plant Meeting (Nash Co; August 15, 2024)
 - Presentation: *Tissue Sampling and Proper Nutrition Levels*, W. Howell
- Sesame Field Day (Sampson Co; August 29, 2024)
 - Presentation: *Split Nitrogen Fertilizer Trial Results*, W. Howell
- Rockingham County Vegetable Production Meeting (Rockingham Co; October 9, 2024)
 - Presentation: *Optimizing Vegetable Production Through Nutrient Management*, A-B. Williams
- Robeson County Ag Awareness Days (Robeson Co; October 14, 15, 16, 2024)
 - Presentations: *Corn and Soybean Presentation for Third Graders*, G. Love
- Mecklenburg Growers Meeting (Mecklenburg Co; October 29, 2024)
 - Presentation: *What the NCDA&CS Agronomic Division Has to Offer You*, D. Overcash
- Pest Management Class – UNC Pembroke (Robeson Co; November 5, 2024)
 - Presentation: *NCDA&CS and My Job*, G. Love
- Regional Agronomist Staff Meeting (Wake Co; November 7, 2024)
 - Presentation: *Hands-On Field Safety for Agronomists*, A-B. Williams
- CEFS Haywood Hurricane Relief Meeting (Haywood Co; November 18, 2024)
 - Presentation: *NCDA&CS Agronomic Services Overview*, C. Leek
- Animal Waster Workshop/OIC Training (Duplin Co; November 22, 2024)
 - Presentation: *OIC Training/Recertification Presentation*, W. Howell
- Animal Waste Workshop/OIC Training (Duplin Co; December 3, 2024)
 - Presentation: *OIC Training/Recertification Presentation*, W. Howell
- Southeast Vegetable & Fruit Conference (Myrtle Beach, SC; December 4, 2024)
 - Presentation: *Flying The Farm: A Drone’s Birds-Eye View*, W. Howell
- OIC Animal Waste Management Training (Sampson Co; December 6, 2024)
 - Presentation: *OIC Training/Recertification Presentation*, W. Howell

- Extension Master Gardeners' Meeting (Mecklenburg Co; January 14, 2025)
 - Presentation: *Soil Testing and Interpretation*, D. Overcash
- Old Belt Tobacco GAP Meeting (Stokes Co; January 22, 2025)
 - Presentation: *PALS Going Private: What to do About Accessing Your Account*, A-B. Williams
- Southwestern Agriculture Meeting (Buncombe Co; January 27, 2025)
 - Presentation: *Farm Damage Caused by Hurricane Helene*, C. Leek
- Lumberton High School FFA Career Day (Robeson Co; January 28, 2025)
 - Presentation: *Opportunities in Agriculture*, G. Love
- Animal Waste Management/OIC Training (Bladen Co; January 31, 2025)
 - Presentation: *Tools For the Plan: Waste, Soil, and Plant Analysis*, G. Love
- Soldiers to Agriculture Class (Cumberland Co; February 3, 2025)
 - Presentation: *NCD&CS Overview of Soils and Soil Fertility*, G. Love
- Cooperative Extension Grain Production Meeting (Cumberland Co; February 3, 2025)
 - Presentation: *Guava Root Knot Nematode Recommendations*, G. Love
- Extension Master Gardeners Class (Stokes Co; February 6, 2025)
 - Presentation: *Introduction to Soil Testing*, A-B. Williams
- Sesame Production and Harvest Meeting (Columbus Co; February 12, 2025)
 - Presentation: *Sesame Production and Harvest*, W. Howell
- Field Crops Meeting in Smithfield (Johnston Co; February 13, 2025)
 - Presentation: *Sesame Production and Harvest*, W. Howell
- Strawberry Production Meeting (Columbus Co; February 25, 2025)
 - Presentation: *Strawberry Fertility Management*, G. Love
- Hay Fertility Meeting (Columbus Co; March 4, 2025)
 - Presentation: *Fertility and Weed Management in Bermudagrass Hay*, G. Love
- Extension Master Gardener Meeting (Pender Co; March 11, 2025)
 - Presentation: *Digging Into Soils and Soil Sampling*, W. Howell
- Extension Master Gardener Soils Class (Robeson, Scotland, Hoke Co; March 13, 2025)
 - Presentation: *NCD&CS Overview of Soils and Soil Fertility*, G. Love
- Extension Master Gardeners' Meeting (Caldwell Co; March 18, 2025)
 - Presentation: *Soil Testing and Interpretation*, D. Overcash
- NCSU Surface Irrigation Training (Wake Co; March 19, 2025)
 - Presentation: *How to Collect Soil Samples Correctly and Read Your Report*, B. Thompson

- Duplin Grows (Duplin Co; March 25, 2025)
 - Presentation: Soil Life Interactive Learning Station, W. Howell
- Landowner/Wildlife Meeting (Bladen Co; March 25, 2025)
 - Presentation: *Wildlife Plot Management*, G. Love
- Agronomic Field Services Staff Meeting (Wake Co; March 26, 2025)
 - Presentation: *Potassium Rate Study in Bermudagrass Hay*, G. Love
- Regional Agronomist Staff Meeting (Wake Co; March 26, 2025)
 - Presentation: *Using QGIS, Drone Deploy, and PALS for Farm Mapping*, W. Howell
- NCSU Land Applicator Training (Wake Co; April 10, 2025)
 - Presentation: *How to Collect Soil Samples Correctly & Understand Your Report*, B. Thompson
- Extension Master Gardener Soils Class (Hoke Co; April 25, 2025)
 - Presentation: *Soils and Soil Fertility*, G. Love
- Soldiers to Agriculture Class (Cumberland Co; May 1, 2025)
 - Presentation: *NCDA&CS Overview of Soils and Soil Fertility*, G. Love
- NC Farm School (Moore Co; May 12, 2025)
 - Presentation: What Can NCDA&CS Do For You? An Overview of NCDA Divisions with an Emphasis on the Agronomic Division, B. Thompson
- International Symposium on Soil and Plant Analysis (Montgomery Co; June 13, 2025)
 - Presentation: *An Overview of the Soils of the Sandhills Region of NC*, B. Thompson
- International Symposium on Soil and Plant Analysis Field Day (Montgomery Co; June 13, 2025)
 - Presentation: *Sesame Production Field Day Style*, W. Howell
- 4-H Summer Camp (Duplin Co; June 17, 2025)
 - Presentation: *Drones in Agriculture and Flight Demonstration*, W. Howell
- Seed & Stem Conference (Rowan Co; June 24, 2025)
 - Presentation: Soil Sampling for Raised Beds, D. Overcash

APPENDIX E – External Publications of the Agronomic Division during FY2025

Soil Testing Section

1. Tiecher, T, L. Gatiboni, D. Filippi, D. Osmond, & **D. Hardy**. Effect of P rates in long-term conservation agriculture trials on the vertical distribution of soil acidity and nutrient availability. *Journal of Environmental Quality*. 54:1187-1201.
<https://doi.org/10.1002/jeq2.70029>, 2025

Nematode Assay Section

1. Jimenez, J.L.; Gandhi, P.; Ayyappan, D.; Gorny, A.; **Ye, W.**; Lobaton, E. 2025. Machine learning techniques for nematode microscopic image analysis: A systematic review. *AgriEngineering* 7, 356. <https://doi.org/10.3390/agriengineering7110356>
2. Foote, E., Jordan, D. L., Dunne, J., Gorny, A., Lux, L., **Ye, W.**, Holbrook, C., Monfort, W. S., Stevens, B., Deal, S., & Lanier, I. 2025. Influence of crop sequence, cultivar, and Metam Sodium on plant-parasitic nematode population and peanut. *Crop, Forage & Turfgrass Management*, 11, e70061. <https://doi.org/10.1002/cft2.70061>
3. Guo, K., Ma, X., Fang, Y., Duan, W., Wu, Y., Hu, Z., **Ye, W.** & Gu, J. 2025. A fast and sensitive enzyme mediated duplex exponential amplification method for field detection of *Bursaphelenchus xylophilus*. *Horticulturae* 11, 602. <https://doi.org/10.3390/horticulturae11060602>
4. Foote, E., Jordan, D., Gorny, A., Dunne, J., Lux, L., Shew, B. & **Ye, W.** 2025. Previous cropping sequence affects plant-parasitic nematodes and yield of peanut and cotton more than continuous use of Fluopyram. *Crops* 5, 12. <https://doi.org/10.3390/crops5020012>
5. Wen, Y., Liu, F., Zhen, H., **Ye, W.**, Ni, C., Xu, C., Peng, D. 2025. A new cyst nematode, *Heterodera luodingensis* n. sp. (Nematoda: Heteroderinae) from rice in China. *Plant Disease* 109 (1): 206–216. doi: 10.1094/PDIS-07-24-1565-RE. PMID: 39254849.
6. Esmaeili, M., **Ye, W.** & Subbotin, S.A. 2024. Molecular and morphological characterisation of *Ditylenchoides anyae* sp. n. (Nematoda: Anguinoidea) from Iran. *Nematology* 26 (10): 1103-1113. <https://doi.org/10.1163/15685411-bja10359>
7. Faske, T.R., Watson, T., Desaeager, J., Duffeck, M.R., Eisenback, J., Floyd, C., Grabau, Z., Hajihassani, A., Kelly, H., Kemeraït, R., Lawrence, K., Mueller, J., Smith, M., Wheeler, T. & **Ye, W.** 2024. Summarized distribution of the reniform nematode, *Rotylenchulus reniformis*, in field crops in the United States. *Plant Health Progress* 25:4, 506-508. <https://doi.org/10.1094/PHP-06-24-0059-BR>
8. Giri, S., Mueller, J.D., Ahmed, S.M., Heirs, J.B., Fogle, B.B., Kirk, K.R., **Ye, W.** & Anco, D.J. 2024. Survey of ring nematode in South Carolina peanut fields. *Crop, Forage & Turfgrass Management* 10: e70000. <https://doi.org/10.1002/cft2.70000>
9. Cai, R., Gu, J., **Ye, W.**, Ma, X. & Liu, Y. 2024. Description of *Longidorus sanlitanensis* n. sp. (Dorylaimida: Longidoridae) from the rhizosphere of *Melilotoides ruthenica* and *Chamaerhodos erecta* in China. *Nematology* 26: 705-718. <https://doi.org/10.1163/15685411-bja10333>
10. Wong, T.W., **Ye, W.**, Thiessen, L.D., Huseeth, A.S., Gorny, A. & Quesada-Ocampo., L.M. 2024. Occurrence and distribution of *Meloidogyne* spp. in fields rotated with sweetpotato and host range evaluation of a North Carolina population of *Meloidogyne enterolobii*. *Plant Disease*. 2024 May 12. doi: 10.1094/PDIS-08-22-1877-RE. <https://doi.org/10.1094/PDIS-08-22-1877-RE>
11. Foote, E.; Jordan, D.; Gorny, A.; Dunne, J.; Lux, L.; Ahumada, D.; Shew, B.; Brandenburg, R.; **Ye, W.** 2024. Influence of cropping sequence and tillage system on plant-parasitic nematodes and

peanut (*Arachis hypogaea*) response to Fluopyram applied at planting. *Agronomy* 14, 875.
<https://doi.org/10.3390/agronomy14040875>

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.