

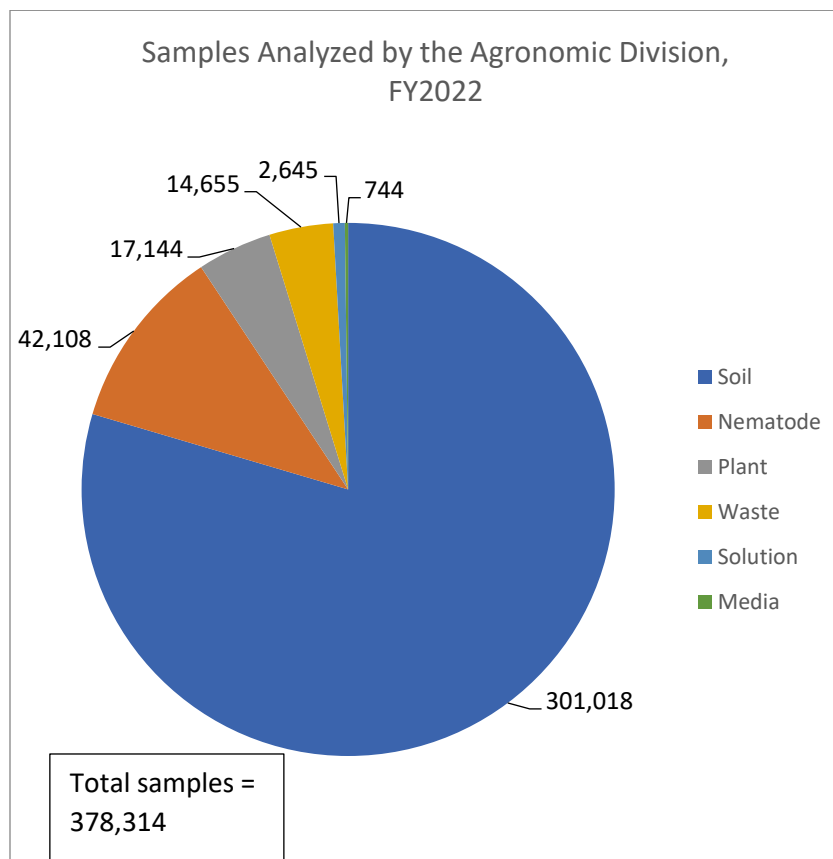
Agronomic Division —2022 Annual Report

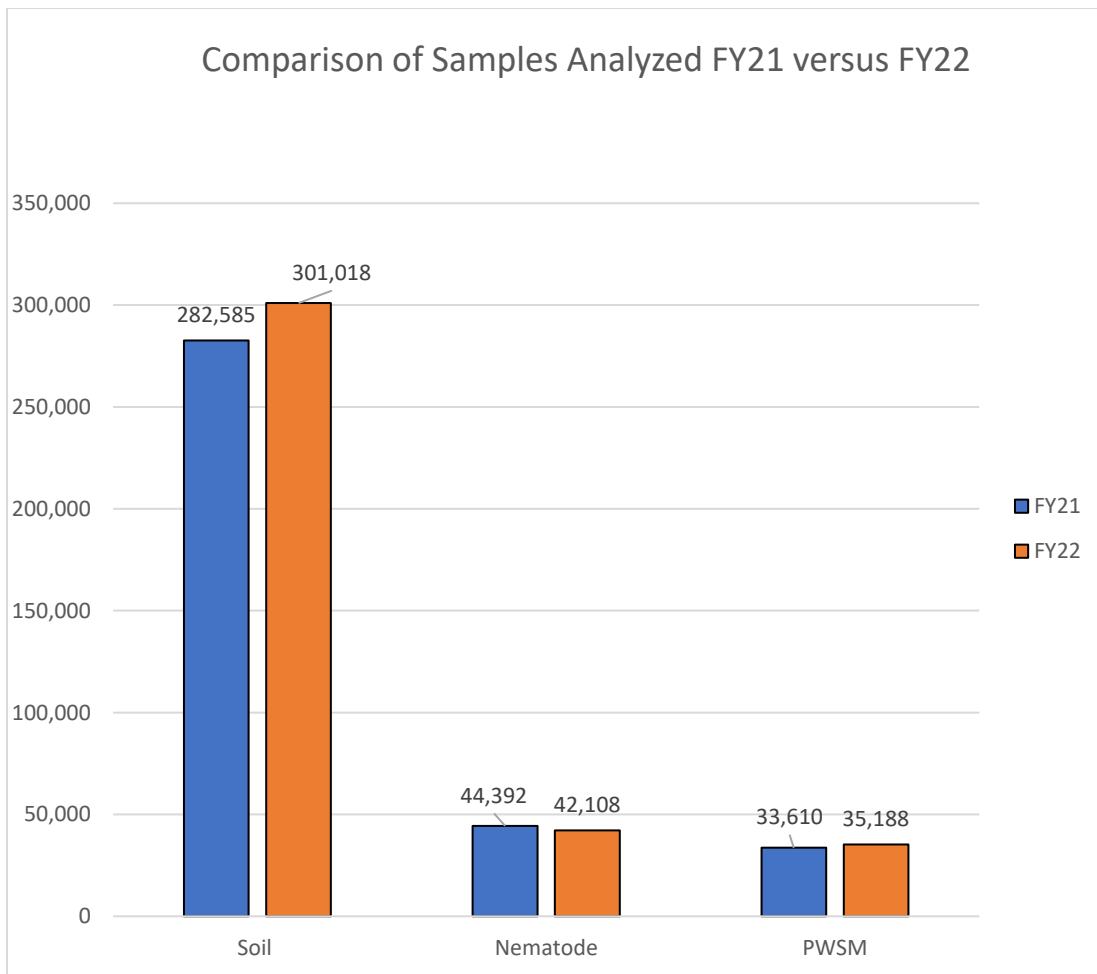
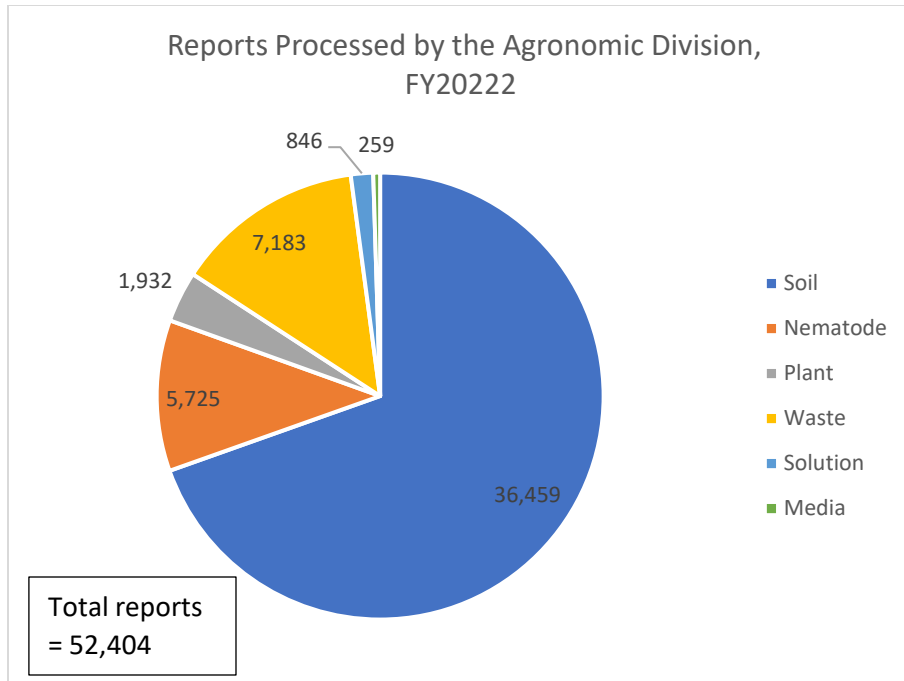
Colleen Hudak-Wise, Ph.D., director, (919) 664-1600

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.

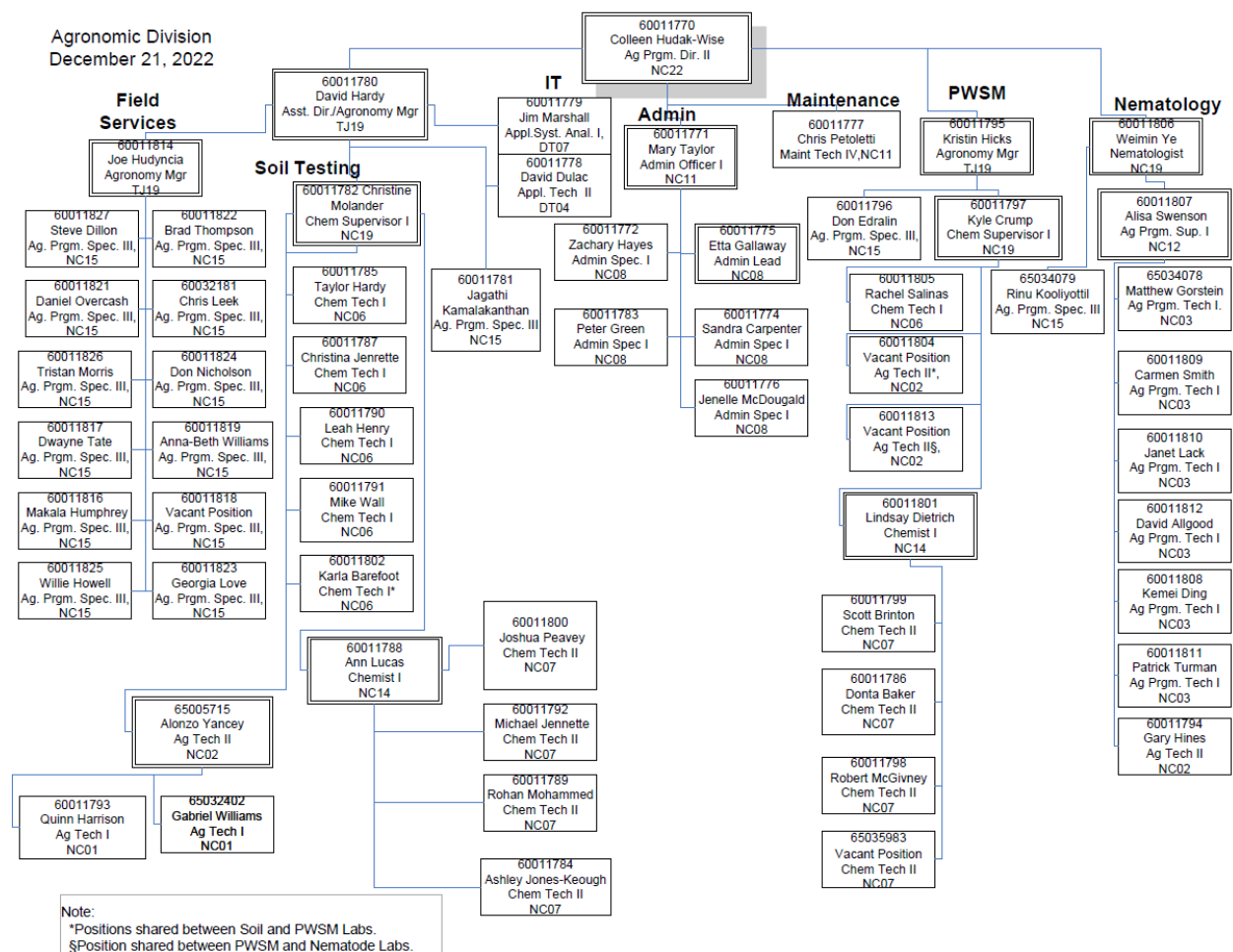
The Agronomic Division’s laboratories processed 378,314 total samples during FY2022 (July 1, 2021 – June 30, 2022), which is approximately a 5% increase over the previous year. Over 52,000 reports with test results and recommendations were prepared for clients during FY2022.





Personnel

The Division had 60 full-time permanent positions during calendar year 2022: 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 and the Field Services territorial map for 2022 follow.



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

Vacant, Region 2

Makala Humphrey, Region 3
Cell: (252) 343-2922
Email: makala.humphrey@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

Don Nicholson, Region 6
Cell: (919) 499-8708
Email: don.nicholson@ncagr.gov

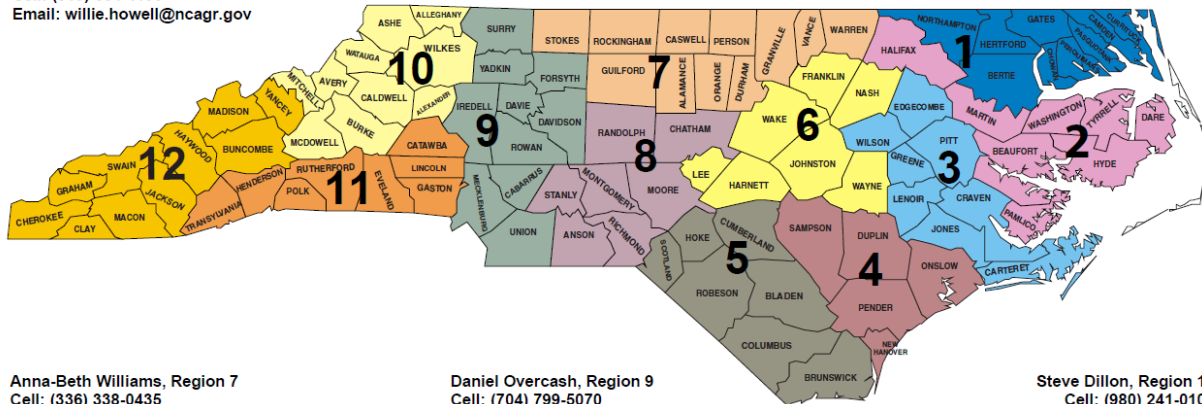
NCD&CS Agronomic Division Field Services

January 2023

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/agronomi/rahome.htm



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

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

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

Dwayne Tate, Region 10
Cell: (828) 443-5281
Email: dwayne.tate@ncagr.gov

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

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

Staff turnover during 2022 included several positions. The following is a description of the personnel changes that took place during 2022.

Personnel Changes for Calendar Year 2022 (Permanent Staff)

- Agricultural Technician I – 65032402, receipt supported position
September 2021 – Candice Adams resigned
March 2022 – Gabriel Williams hired
- Agricultural Program Specialist III (Regional Agronomist) - 60011818
December 2022 – Carla Pugh resigned
December 2022 – position remained vacant
- Agricultural Technician II – 60011813
February 2022 – Rachel Salinas promoted to Chem Tech I
December 2022 – position remained vacant

- Agricultural Program Manager III (Field Services Section Chief) – 60011814
June 2021 – Michelle McGinnis resigned
December 2022 – Joseph Hudyncia hired
- Application Systems Analyst I - 60011779
July 2021 – Grant Sugaski resigned
October 2022 – James Marshall hired
- Administrative Specialist I – 60011772
January 2021 – Sara DeFusco vacated position
February 2022 – Zach Hayes hired
- Chemistry Technician I – 60011790
December 2021– Jessica Newport resigned
March 2022 – Leah Henry hired
- Agricultural Program Technician I – 65034078 (new position)
October 2022 – Matthew Gorstein hired
- Agricultural Program Specialist III – 65034079 (new position)
September 2022 – Rinu Kooliyottil
- Agricultural Technician II – 60011794
April 2022 - Harold (Lee) Page resigned
December 2022 – Gary Hines hired
- Chemistry Technician I – 60011805
December 2022 – Rachel Salinas promoted
December 2022 – position remained vacant
- Agricultural Technician II – 60011804
December 2022 – Michael Wall promoted
December 2022 – position remained vacant
- Chemistry Technician I – 60011791
August 2022 – Ashley Jones-Keough promoted
November 2022 – Mike Wall promoted
- Chemistry Technician II – 60011784
February 2022 – Joseph Wilson resigned
August 2022 – Ashley Jones-Keough promoted
- Agricultural Technician I – 60011793
May 2022 – Danny Sanchez resigned
August 2022 – Quinn Harrison hired

- Agricultural Program Specialist III – 60011796
August 2022 – Jessica Foster resigns
November 2022 – Don Edralin hired
- Agricultural Program Specialist III – 60011815
August 2022 – Mike Wilder retired
August 2022 – position eliminated

Funding

The Agronomic Services Division’s expenditures for FY2022 were more than \$5.6 million. Sources of funding included State Appropriations, expedited soil shippers, peak-season soil fees, fertilizer and lime taxes, and “other” sample fees (nematode, plant, waste, solution, and media samples).

FY2022 Sources of Funding

State Appropriations, \$4,058,669 (68%)

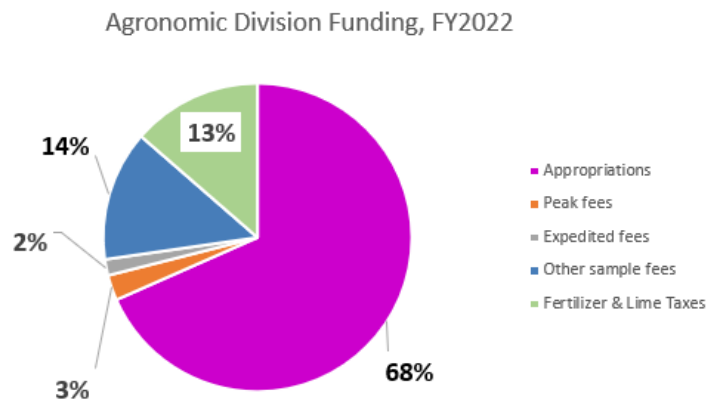
Peak-season Soil Fees, \$158,100 (3%)

Expedited Soil Fees, \$100,000 (2%)

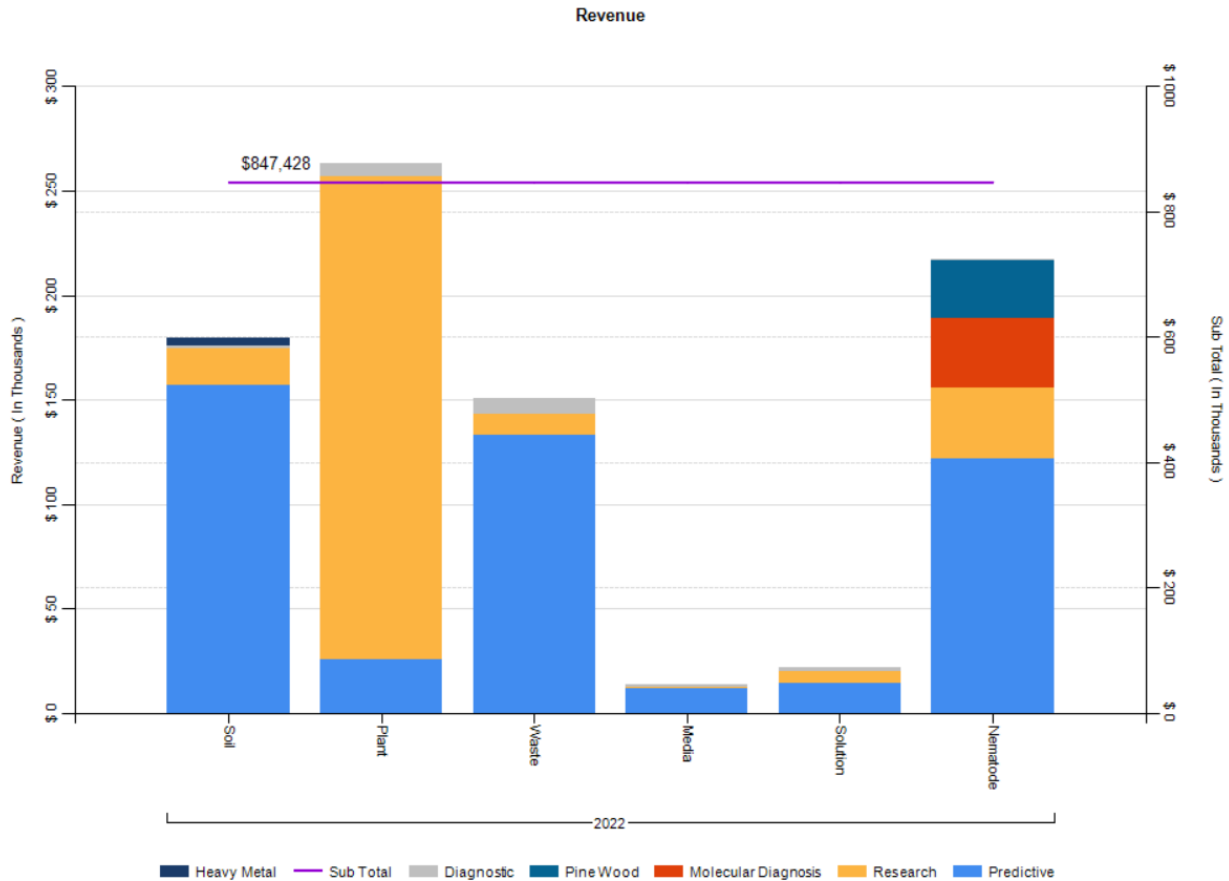
Other Sample Fees, \$811,478 (14%)

Fertilizer & Lime Taxes, \$807,771 (13%)

Total Budget: \$5,936,018



The chart below shows the FY2022 revenue generated by routine samples.



Laboratory Services

Quality Analysis/Quality Control

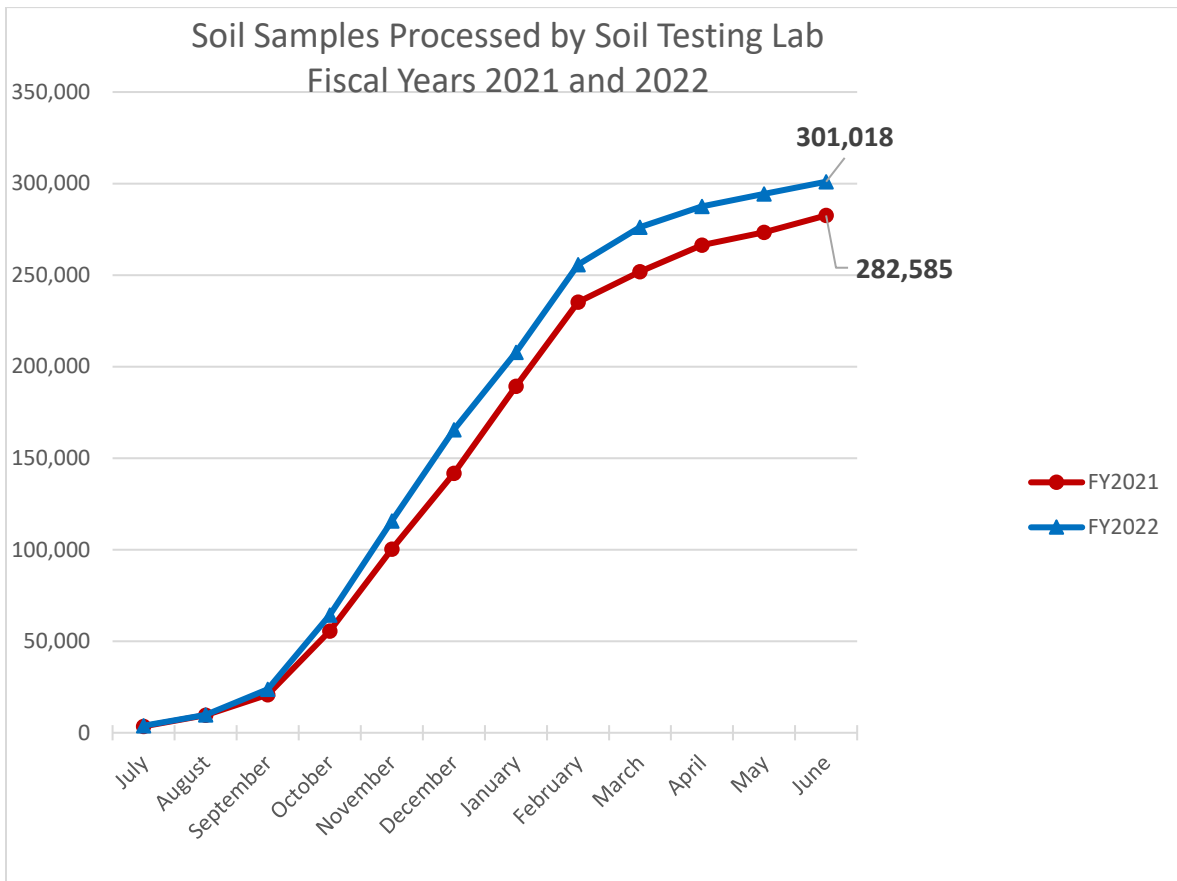
The Soil Testing and Plant/Waste/Solution/Media Advisory Laboratories participate in several external quality control programs. Annual analysis of unknown samples provided by an accredited proficiency testing provider is part of the laboratory recertification process by the Division of Environmental Quality's Division of Water Resources' Laboratory Certification Branch. The Agronomic Division passed its proficiency testing in 2022 and remains certified by DEQ through 2023.

The Agronomic Division also voluntarily participated in the following inter-laboratory proficiency testing and certification programs during 2022:

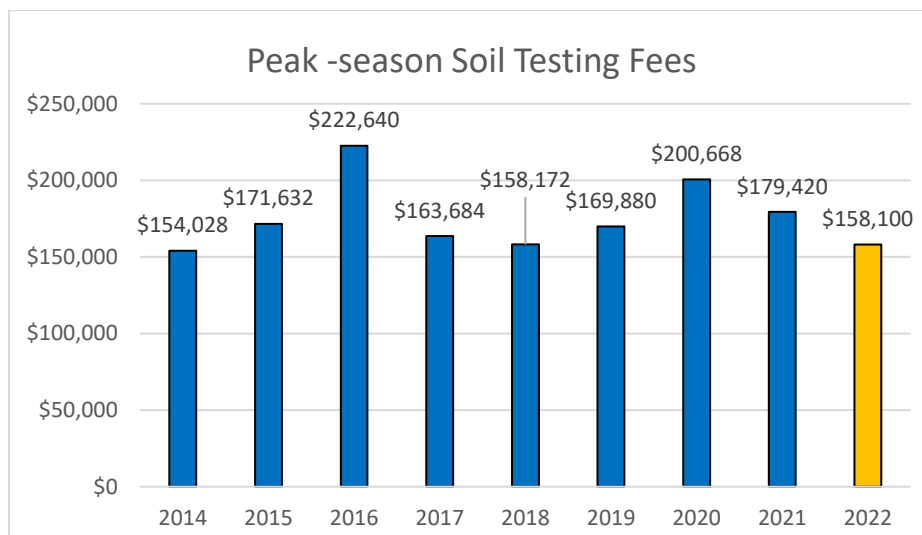
1. North American Proficiency Testing Program (NAPT) – soil analyses
2. Manure Analysis Program (MAP) – manure analyses
3. Agricultural Laboratory Proficiency program (ALP) – soil and plant tissue analyses

The **Soil Testing Section**, under the direction of David H. Hardy, Ph.D., analyzed 301,018 soil samples in FY2022: 275,496 predictive; 18,609 predictive expedited samples; 1,436 diagnostic;

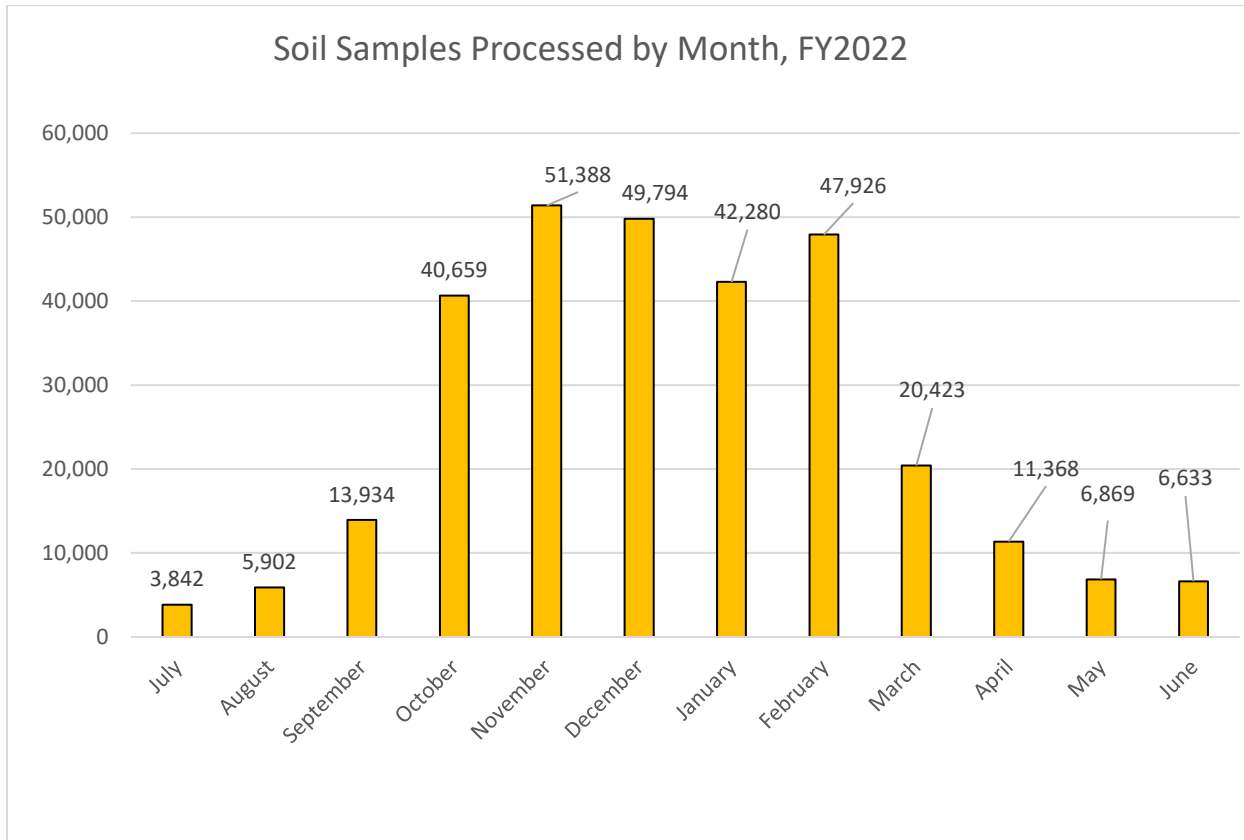
3,553 research; 1,744 internal; 160 heavy metals; and 20 witchweed. The Soil Testing Lab issued a total of 36,459 reports for fertilizer/lime recommendations. Total sample volume for FY2022 was up about 6.5% compared to the previous fiscal year.



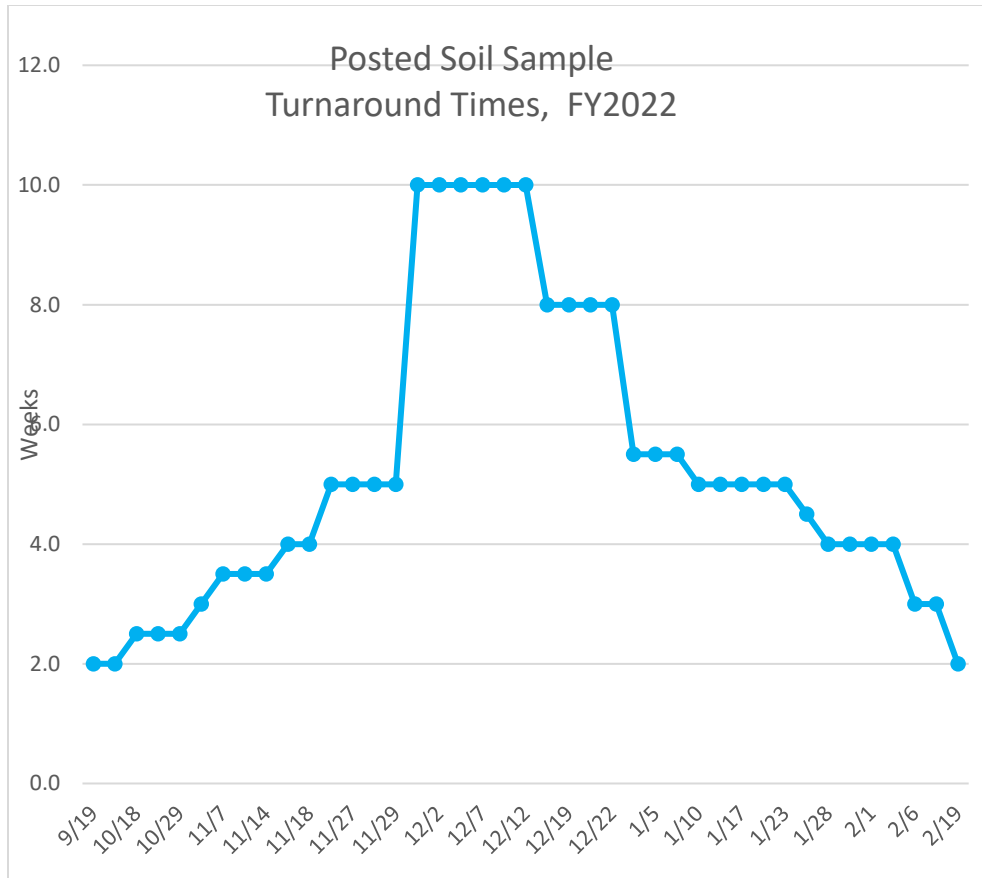
A total of \$158,100 was collected in peak-season soil testing fees (\$4.00/sample) for samples submitted December 1, 2021, through March 31, 2022. Peak-season samples (39,525) represented 13% of the total sample volume analyzed by the Soil Testing Lab.



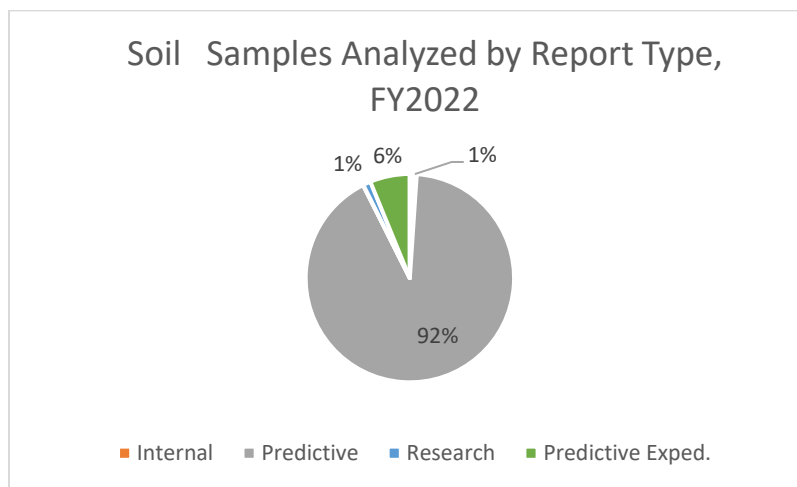
As seen below, the peak-season fee achieved its intended purpose, to distribute the workload for the Soil Testing Lab more evenly across the year. November 2021 was the busiest month of FY2022, with 51,388 soil samples analyzed.



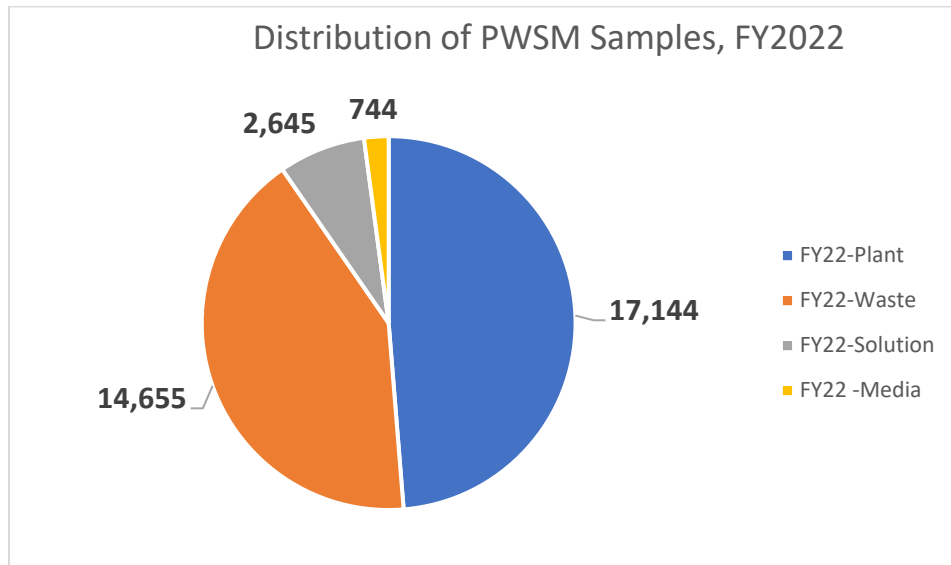
In general, the sample turnaround times were very acceptable for growers during FY2022. Soil sample turnaround for predictive samples plateaued at ten weeks on December 1, 2021, but then dropped back down to two weeks by February 19, 2022.



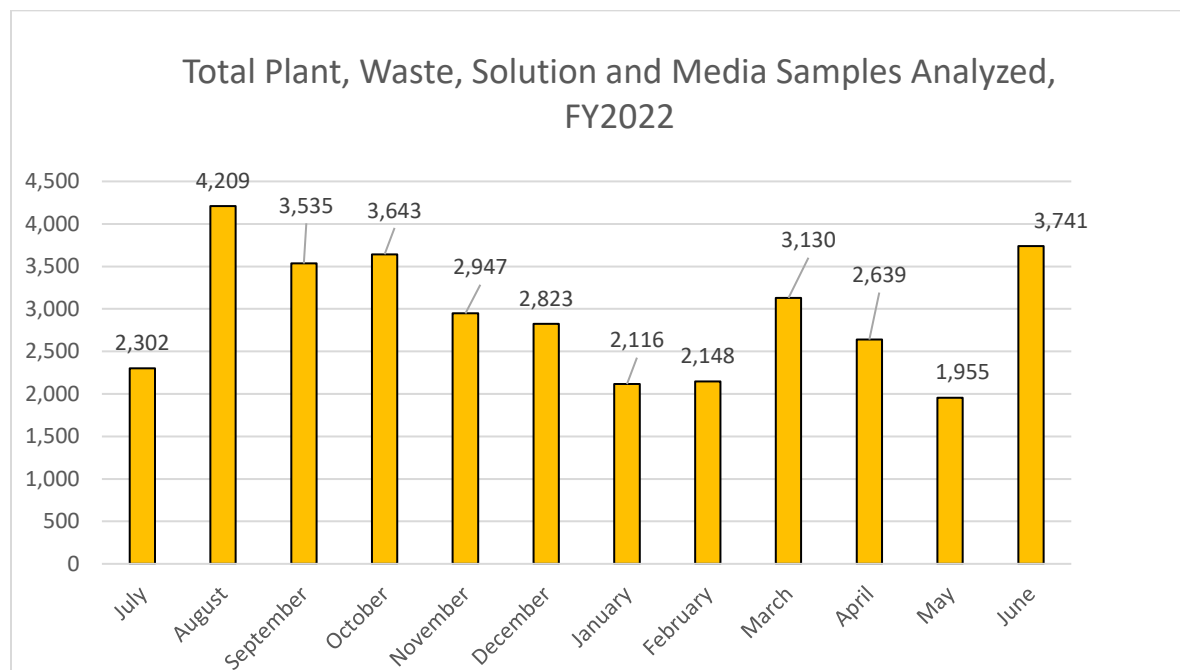
For high-volume customers wanting a guaranteed turnaround time of 7 to 10 business days, a limited number of 36-sample “expedited shippers” were sold at \$200 each. During FY2022, 18,609 samples (~6% of total sample volume) were submitted to the Soil Testing Laboratory in expedited shippers.

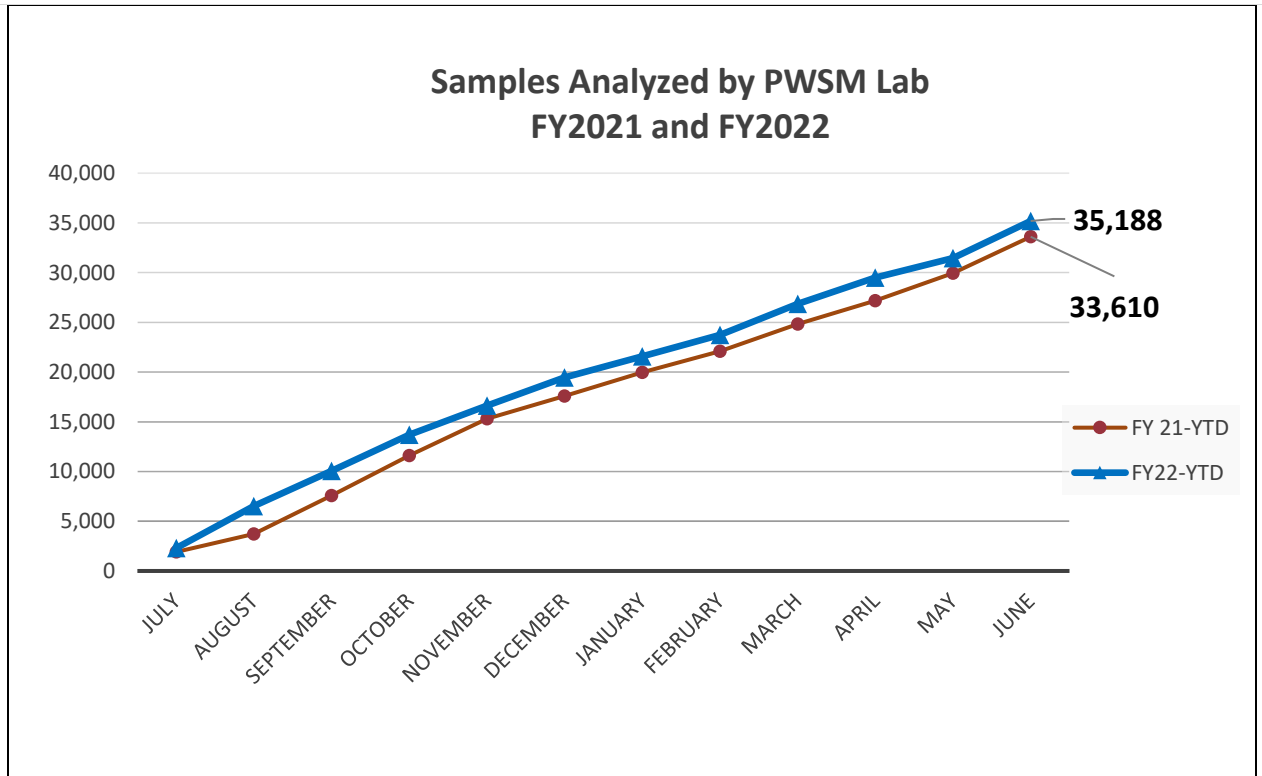
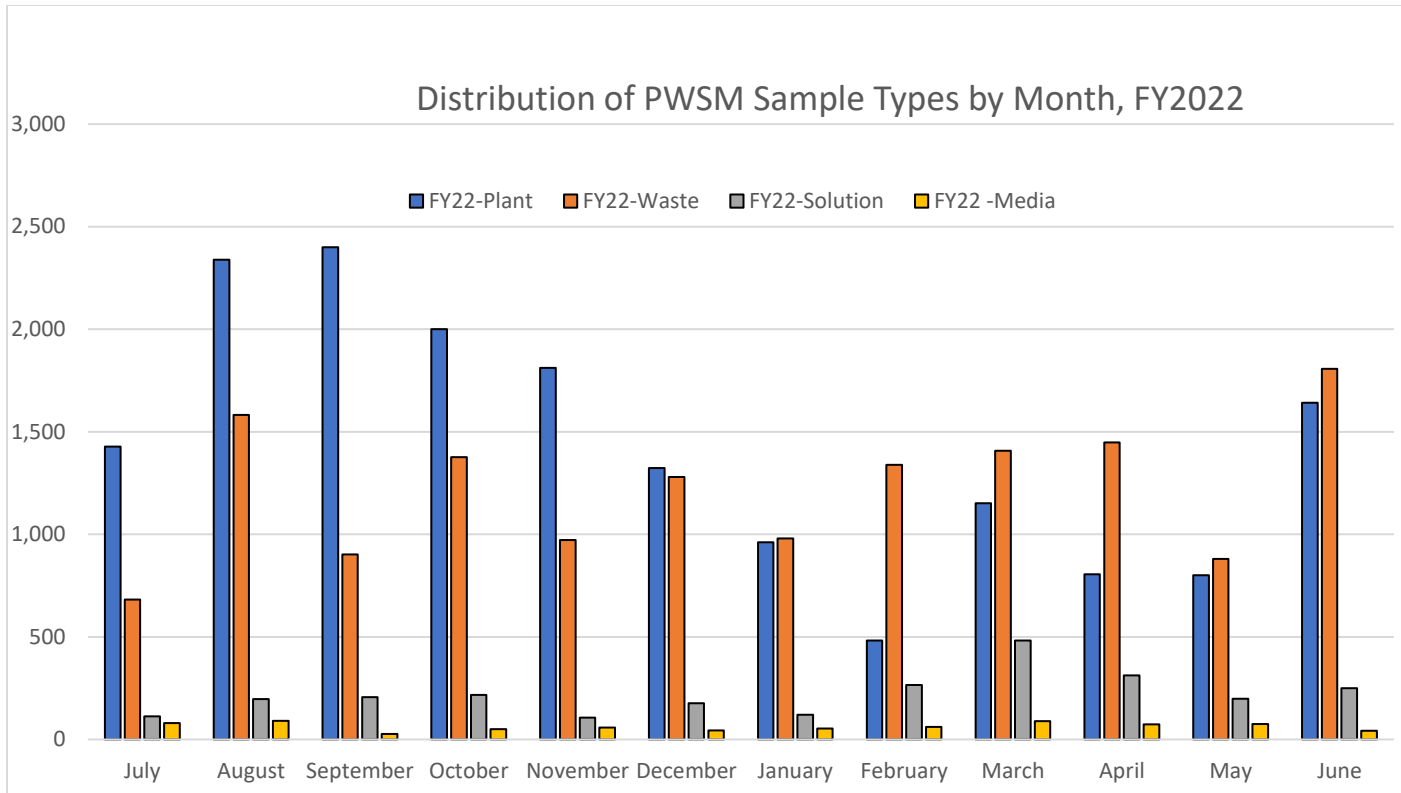


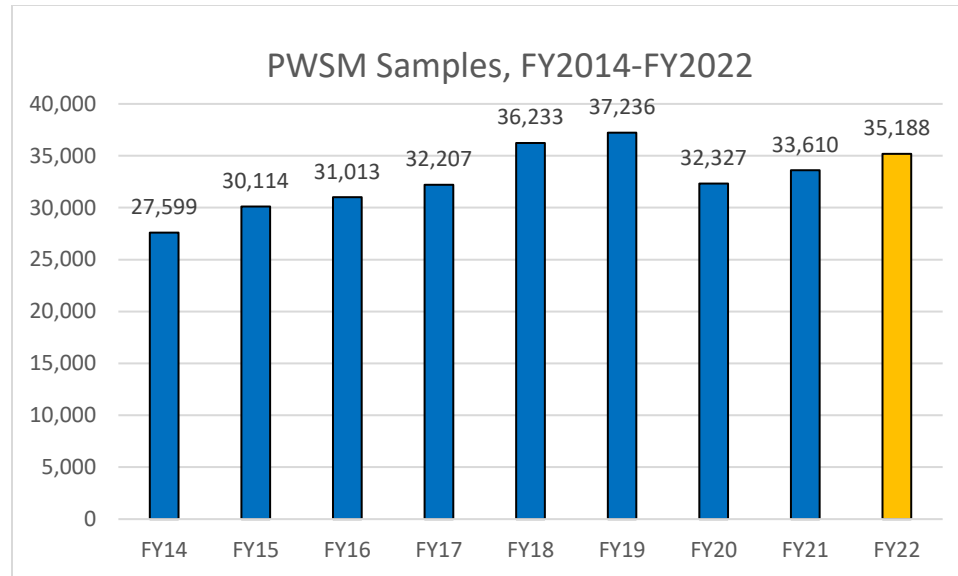
The **Plant/Waste/Solution/Media (PWSM) Section**, under the direction of Kristin Hicks, Ph.D., issued a total of 10,220 reports during FY2022. These reports gave recommendations for 17,144 (49%) plant tissue samples; 14,655 (42%) waste samples; 2,645 (7%) solution samples; and 744 (2%) soilless media samples in FY2022. Overall, annual sample volume was up about 2% 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.



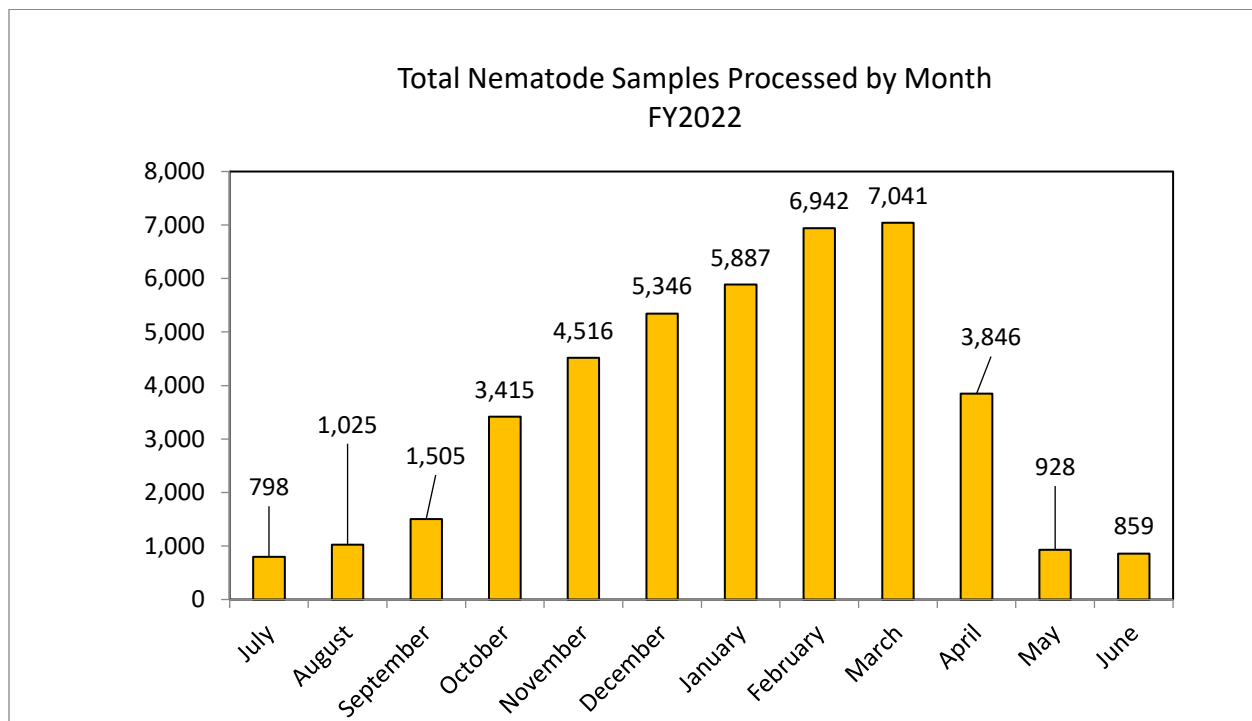
The busiest month for the PWSM Section for FY2022 was August 2021, with 4209 samples analyzed, followed by June 2022, with 3,741 samples. In total, 35,188 samples were processed during FY2022.





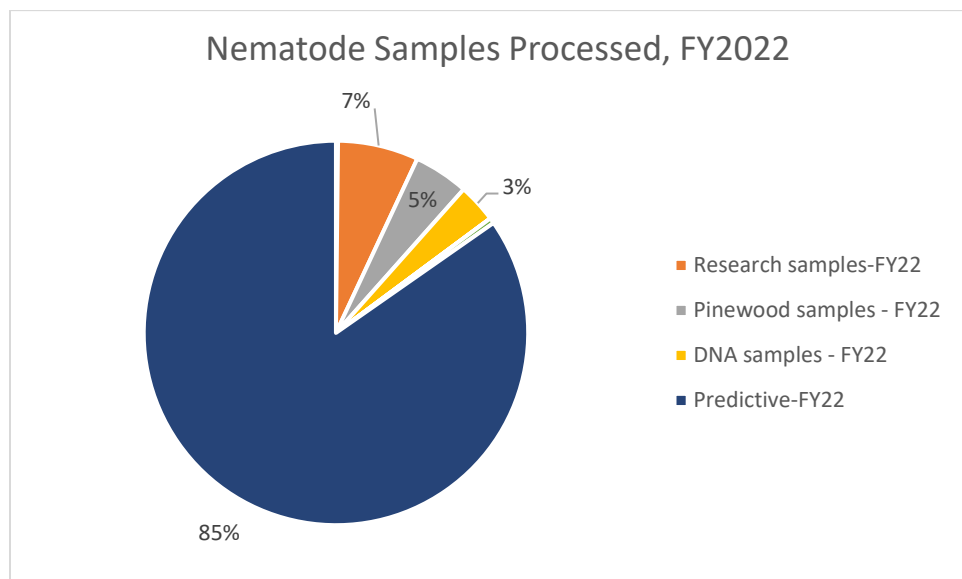


The Nematode Assay Section, under the direction of Weimin Ye, Ph.D., processed 42,108 samples and issued 5,725 reports in FY2022. Total sample volume was down about 5% compared to FY2021, mainly due to the drop in pinewood samples (down ~40%) associated with trade disruptions with China and a change in sampling protocols by USDA. The productivity of the Nematode Assay Lab was still very impressive in FY2022, with the 7th highest sample volume in the NCDA&CS Nematode Lab's 42-year history. March 2022 was the busiest month in FY2022 for the lab, with 7,041 samples processed.

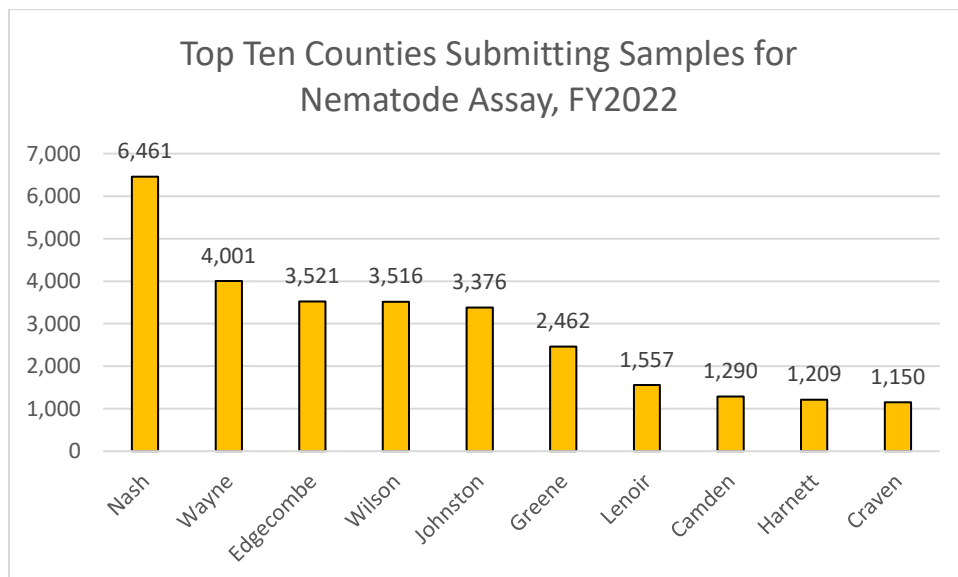
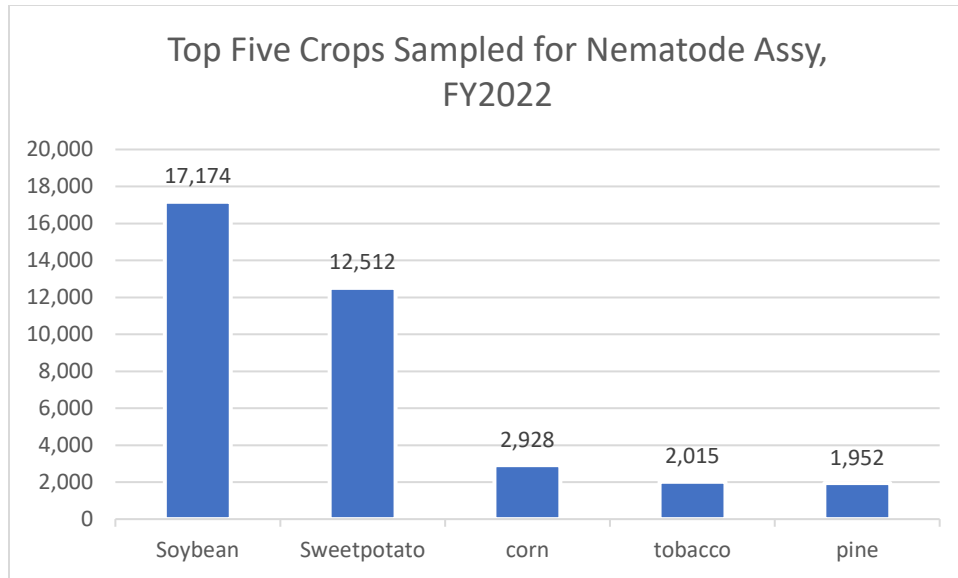


Most samples (35,655) were predictive in nature; other types included 2,856 research samples, 73 diagnostic samples, 193 internal samples, 1,377 molecular diagnostic samples, and 2 regulatory samples from the NCDA&CS Plant Industry Division.

In addition, 1,942 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 41 samples, but this was only 2.11% of the total pine wood samples assayed. A tariff imposed by China on pinewood imported from the United States has continued to have a negative impact on pinewood samples submitted to the Nematode Assay Lab. Pinewood samples made up 5% of all nematode samples processed in FY2022, compared to 27% in FY2018 when the pinewood samples peaked in the Nematode Assay Lab. Although most pinewood samples came from North Carolina ports, the Nematode Lab also processed samples from Georgia, Florida, Alabama, and Maryland, with each out-of-state sample being assessed an additional \$10 surcharge.



In FY2022, the crop with the largest number of submitted samples was soybean, with 17,174 samples (41% of total sample volume), followed by sweetpotato (12,512 samples and 30% of total). The top five counties submitting nematode samples for assay were Nash, Wayne, Edgecombe, Wilson, and Johnston Counties, with samples totaling, 6,461; 4,001; 3,521; 3,516, and 3,376, respectively.



The Nematode Assay Lab processed 69 samples for the NC State University's Plant Disease and Insect Center as part of a long-standing cooperative agreement.

Field Services

Field Services Section personnel, under the direction of Dr. David Hardy as Acting Field Services Section Chief, made about 10,500 grower consults in FY2022, 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 500 inquiries regarding environmental issues in FY2022, primarily nutrient management plan guidance, regulatory changes or updates, and river basin oversight reviews, and participated

in at least 24 county Soil & Water local advisory committees for watershed nutrient strategies.

Field Services personnel served on at least 14 agricultural commodity and agricultural organization boards, committees, and advisory groups.

- Corn Growers Association of North Carolina Board – Don Nicholson
- Lee County Farm Bureau Board – Don Nicholson
- Madison County Ag Agencies Board – Chris Leek
- Mountain Research Station Field Day Planning Committee – Chris Leek
- NC Ag Foundation Board – Georgia Love
- NC Peach Growers Society – Brad Thompson
- NC Tomato Growers Association Board – Chris Leek
- Robeson County Crop Promotion Association Board – Georgia Love
- Robeson County Extension Field Crops Advisory Committee – Georgia Love (Chair)
- Upper Mt. Research Sta. Research Greenhouse Facility Advisory Group – Dwayne Tate
- Wayne County Farm Bureau Board – Willie Howell
- Wilkes County/Roaring River Water Quality Initiative Advisory Comm. – Dwayne Tate
- Rowan County Extension Advisory Council – Daniel Overcash
- SB1217 Interagency Guidance Committee – Willie Howell, Joe Hudyncia

Outreach Activities and Publications (Fiscal Year 2022)

Agronomic Division staff reached thousands of growers and agricultural professionals through a wide range of outreach activities in 2022.

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. During fiscal year 2022, the AdvanSix and NCDA&CS Voucher Program funded the nutritional analysis of 126 plant samples, benefiting 53 growers. Of the 126 samples, 83 vouchers were used for 6 field crops and 43 vouchers for 11 horticultural crops. By geographic region, 45 plant samples were collected from the Piedmont, 77 from the Coastal Plain and 4 from the Mountains. Plant samples from 27 of North Carolina's 100 counties were supported by the voucher program. Robeson [25], Cumberland [17], Rowan [11], and Cleveland [10] counties used the greatest number of vouchers.

Laboratory Tours

Laboratory tours for farmers, master gardeners, agribusiness groups, scientists, and students were suspended during fiscal year 2022 due to COVID-19.

News Releases

The Agronomic Division developed four news releases during FY2022.

	News Releases for Fiscal Year 2022	Date
1.	<i>Submit soil samples now to avoid peak-season fees</i> by Dr. David Hardy	Oct. 28, 2021
2.	<i>NCDA&CS Agronomic Services staff offer timely fertilizer advice</i> by Dr. David Hardy	March 4, 2022
3.	<i>Now is a good time to submit soil samples for lawn and garden</i> by Jagathi Kamalakanthan	April 14, 2022
4	<i>Optimize strawberry fertility with plant tissue testing</i> by Dr. Kristin Hicks https://smallfruits.org/2022/04/optimize-strawberry-fertility-with-plant-tissue-testing/?cat=16	April 11, 2022

External Publications

Six external professional publications were published by staff during FY2022 (July 1, 2021-June 30, 2022).

1. Gorny, A., **Ye, W.**, Cude, S. & Thiessen, L. 2021. Soybean Root-Knot Nematode: A Diagnostic Guide. *Plant Health Progress* 22 (2): 164–175. <https://doi.org/10.1094/PHP-01-21-0005-DG>.
2. Gu, M., Bui, H.X., **Ye, W.** & Desaegeer, J.A. 2021. First report of *Meloidogyne enterolobii* on sweet potato in Florida, USA. *Nematropica* 51 (1): 36-40.
3. Gu, M., Bui, H.X., Desaegeer, J.A. & **Ye, W.** 2021. The first report of *Meloidogyne enterolobii* on Thai basil in Florida, United States. *Plant Disease* 105 (11): 3764. <https://doi.org/10.1094/PDIS-02-21-0293-PDN>.
4. **Ye, W.**, Koenning, S.R., Zeng, Y., Kan, Z. & Liao, J. 2021. Molecular characterization of an emerging root-knot nematode *Meloidogyne enterolobii* in North Carolina, USA. *Plant Disease* 105 (4): 819-831.
5. Kulesza, S., Burns, J., Woodley, A., Gatiboni, I., Shupe, M., & **Hicks, K.** Distribution and Fractionation of Zinc and Copper in Poultry Litters Across North Carolina. *Communications in Soil Science and Plant Analysis*. May2022. <https://doi-org.prox.lib.ncsu.edu/10.1080/00103624.2022.2072866>
6. Wilson, M., Cortus, S., Brimmer, R., Floren, J., Gunderson, L., Hicks, K., Hoerner, T., Lessl, J., Meinen, R., Miller, R., Mowrer, J., Porter, J. Spargo, J., Thayer, B., Vocasek, F. May 2022. *Recommended Methods of Manure Analysis, Second Edition*. University of Minnesota Libraries Publishing. Retrieved from the University of Minnesota Digital Conservancy, <https://hdl.handle.net/11299/227650>.

Research (Fiscal Year 2022)

Division staff routinely engage in cooperative studies with university personnel, farmers, and industry specialists. Research conducted in FY2021 includes the following:

- 1) A Lime Laboratory Incubation and Lime Rate Field Study, in cooperation with Crop and Soil Sciences at N.C. State University (NCSU) – Joseph Wilson and **Dr. David Hardy** (NCDA&CS) and Drs. Carl Crozier, John Havlin and David Jordan (NCSU). Project funding: Agronomic Division. Study conducted for Master of Science in Soil Science.
- 2) Validation of Phosphorus Recommendations in Corn for Grain, in cooperation with Crop and Soil Sciences at N.C. State University (NCSU) - **Dr. David Hardy** (NCDA&CS) and Dr. Luke Gatiboni (NCSU). Project funding; NC Corn Growers Association
- 3) Starter Phosphorus Fertilizers for Corn in North Carolina, in cooperation with Crop and Soil Sciences at N.C. State University (NCSU) – **Dr. David Hardy** (NCDA&CS), Dr. Luke Gatiboni (NCSU), and Dr. Deana Osmond (NCSU). Project funding: NC Corn Growers Association.
- 4) Nitrogen Rate Management for Malting Quality Barley in North Carolina in cooperation with the Crop and Soil Sciences Department at N.C. State University (NCSU) – **Dr. Kristin Hicks** (NCDA&CS); Regional Agronomist Brandon Poole (NCDA&CS); Dr. Luciano Gatiboni (NCSU); Dr. Deanna Osmond (NCSU) and Graduate Student Josh Whelan (NCSU). Project funding: N.C. Tobacco Trust Fund Commission
- 5) Nitrogen and Potassium Rates for Floral CBD Hemp Production in cooperation with the Crop and Soil Sciences Department at N.C. State University (NCSU) – **Dr. Kristin Hicks** (NCDA&CS); Dr. Michelle McGinnis (NCDA&CS); Dr. Loren Fisher (NCSU); Dr. Keith Edmisten (NCSU); Dr. Matthew Vann (NCSU); Dr. David Suchoff (NCSU), and Maggie Short (NCSU). Project funding: New and Emerging Crops Grant.
- 6) Molecular Characterization and Diagnosis of Root-knot Nematodes (*Meloidogyne* spp.) from North Carolina – **Dr. Weimin Ye** (NCDA&CS).
- 7) Efficacy of Fumigants to Pinewood Nematode Found in Debarked Southern Yellow Pine Woodchips in Savannah, Georgia – **Dr. Weimin Ye** (NCDA&CS).

Safety Program (Calendar Year 2022)

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 thirteen 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 2022 safety program and submitted it to the N.C. Department of Labor (NCDOL) on February 15, 2023. (Reports are prepared according to the calendar year per NCDOL guidelines.) The Agronomic Division had two recordable workers' compensation cases during 2022, one of which resulted in lost days from work. In addition, there were seven first aid injuries and two near misses reported during 2022.

