

Minutes of the 2023 SERA-IEG-6 (Southern Extension and Research Activities Information Exchange Group 6) Meeting

Prepared by: Shannon Alford, PhD; Director of Clemson University Agricultural Service Laboratory,
SERA6 Vice Chair 2022-2024, Co-Chair of 2023 Meeting



Meeting Overview: The SERA6 regional meeting was held June 5-7, 2023 in Auburn, AL, and hosted by Dr. Jessica Davis, Director of the Soil, Forage, & Water Testing Laboratory at Auburn University. Drs. Robert Florence and Shannon Alford co-chaired the meeting in lieu of SERA6 Chair Dr. Jim Wang, who was on sabbatical during the meeting time. For 2023, there were 43 individual registrants for the meeting. The meeting was held at the Ag Heritage Park Pavilion in Auburn, AL. Additionally, a [webpage](#) was developed to provide updated information to participants.

SERA-IEG-6 Officers and Advisors

Jim Wang, Louisiana- Chair
Shannon Alford, South Carolina- Vice Chair
Robert Florence, Tennessee- Secretary

Tom Obreza, Florida- past Advisor
Nathan McKinney, Arkansas- Advisor

Schedule

Monday, June 5th - Dinner at Hotel at Auburn

5:00 PM Check-in: Pick up name tag and programs
5:10 PM Reception
5:30 PM Introductions
6:00 PM Welcome Dinner at The Hotel at Auburn University
7:00 - 9:00 PM State Reports

Tuesday, June 6th - Ag Heritage Park

7:45 AM Travel to Ag Heritage Park
8:00 AM Breakfast- Sponsor Leco
8:45 AM - 15 mins - Sponsor Talk - Ametek (SpectroAnalytical) Tom Bloomer
9:00 AM - 35 mins - Dr. Gerson L. Drescher "Soil Sampling Position on Raised Beds Influences Soil-Test Results and Fertilizer Recommendations"
9:40 AM - 15 mins - Sponsor Talk- Elementar - Chase Migliore "Excellence in Elements"
10:00 AM - 30 mins - Dr. Nathan Slaton "Update on FRST"
10:30 AM - 15 mins - Sponsor Talk - Scott Schroeder FiaLabs

11:00 AM - 35 mins - Dr. Simerjeet Virk - "Investigating Different Soil Sampling Grid Sizes for Site-Specific Nutrient Management in Georgia"
11:40 AM - 15 mins - Sponsor Talk - BlueSun Rachael Glenister "Innovations in Rapid Soil, Forage, and Feed Analysis"
12:00 PM - 1 hour - Lunch - Soilkit Sponsor
1:00 PM - 30 mins - Dr. Bryan Hopkins - "NAPT Update and Analytical Precision and Accuracy"
1:30 PM - 15 mins - Sponsor Talk - Texas Scientific Doug Keene - "Optimizing Productivity For ICP Analysis of Agronomic Samples"
2:00 PM - 45 mins - Keynote Speaker Dr. Frank Sikora "Experiences on Rebuilding a Soils Lab"
2:45 PM - 35 mins - Dr. Brenda Tubana - "Silicon in Crop Production: Updates on Testing and Fertilizer Guidelines"
3:20 PM - 35 mins - Dr. Kristin Hicks "Simplified Approach to Developing Tissue Nutrient Reference Ranges with Cannabis sativa as a Model"
4:00 PM Travel to Soil Lab: Soil Lab Tour and Discussions - Includes Old Rotation and Cullars Rotation - Dr. Charles Mitchell will host discussion sections
5:00 PM Travel to Tour Hotel Garden
6:00 PM Free Time - Tourist Tuesday

Wednesday, June 7th - Ag Heritage Park

8:00 AM Breakfast and Historical Tea with Tia - Breakout discussion sections determined on Tuesday, schedule meetings with vendors
9:00 AM - 30 mins - Nancy Bohl Bormann- "ManureDB: Creating a nationwide manure test database"
9:30 AM - 30 mins - Bob Miller ALP - "Soil carbon sequestration and measurement uncertainty"
10:00 AM - 30 mins - Discussion Section - Hosted by Dr. Frank Sikora and Dr. David Butler "Significance of high tunnels - tomato"
10:30 AM - 15 mins - Dr. Nathan McKinney "Administrative Advisor Update"
10:45 AM - 15 mins - Dr. Manjula Nathan - "Updates on North Central Extension and Research activities (NCERA-13)"
11:00 AM - 20 mins - Dr. Charlie Mitchell - "History of SERA 6"
11:30 AM SERA-6 Business Meeting: Future of SERA 6
12:00 PM Goodbye and Depart

Sponsors

There were 11 vendors/organizations who sponsored the meeting and many offered promotional items to participants. They were the following:

1. Agricultural Laboratory Proficiency Program
2. Auburn University- Alabama Agricultural Experiment Station
3. Alabama Soil & Water Conservation Committee
4. Blue Sun Scientific
5. Elementar
6. FIALab Instruments, Inc.
7. Leco Corporation
8. North American Proficiency Testing Program
9. Soilkit
10. Spectro Analytical
11. Texas Scientific Products

Other Business

- Nathan McKinney (U of Arkansas, SERA6 advisor) made some comments and suggestions to the group including the following.
 - As a group do several things very well:
 - Information Exchange
 - Annual Updates
 - FRST Project
 - Including industry reps
 - Collegial but lively discussion
 - Areas to improve:
 - create committees to accomplish tasks- website, publications, reports, metrics, annual meeting; Include lab staff, faculty, etc.; committees offer reports at annual meeting
 - Invite USDA-NIFA Program Leader as invited speaker- get them to tell us what they really want from us as group; Sandeep Kumar (Contact mentioned from Manjula) and Diomides Zamora; they are listed on our NIMSS site
 - update the website (fix broken links)- Mission is good; Objectives- need some help; get down to 3-4, worded so anyone can remember what we do
- Manjula Nathan (UoMO), provided a NCERA13 Update: She will be retiring within 2 years; NCERA has committees for methods, etc.; They are discussing joint meeting for next year

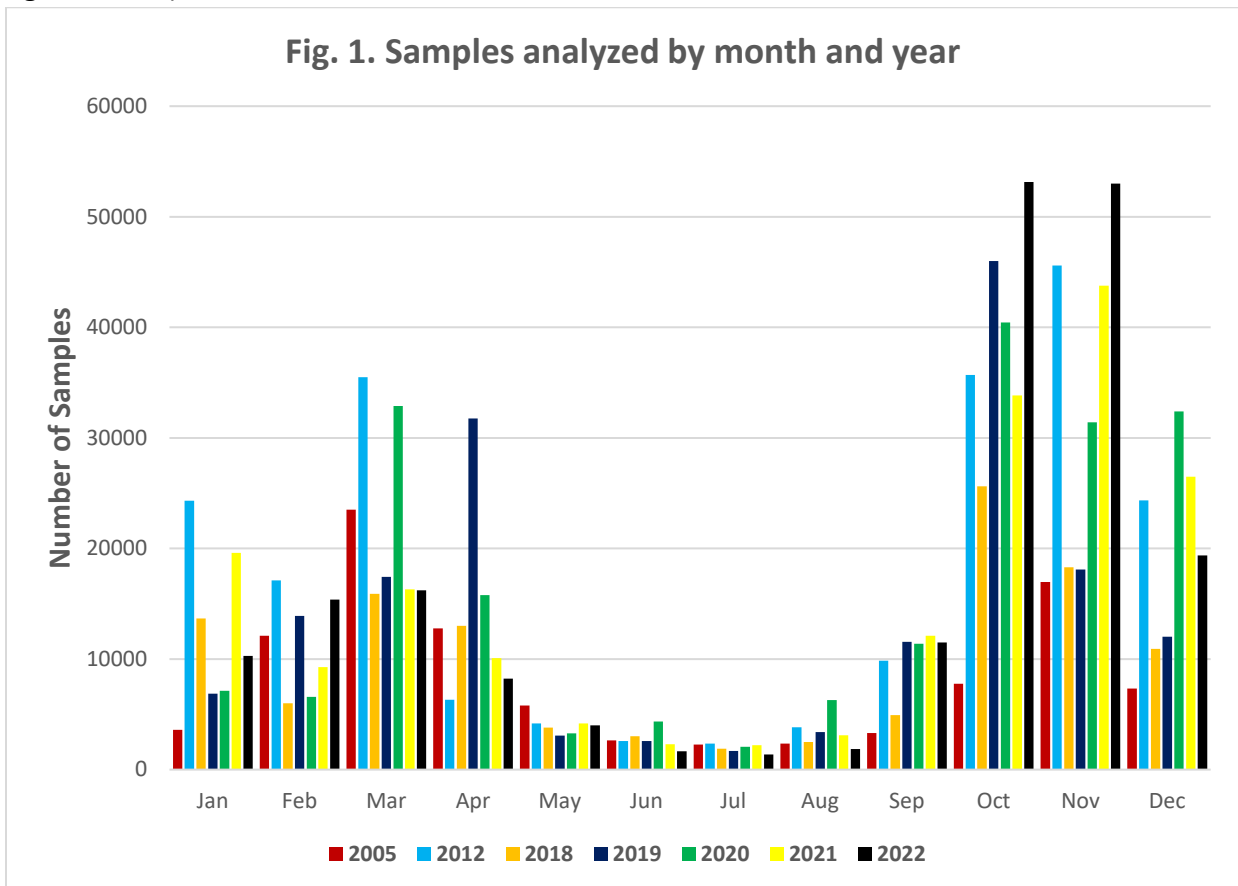
State reports were provided by the following participants and are attached as submitted:

AL- Jessica Davis; Audrey Gamble (Auburn U); oral report only
AR- Nathan Slaton (U of Arkansas)
FL- Tom Obreza (U of Florida); oral report only
GA- Uttam Saha (U of Georgia)
KY- Frank Sikora (U of Kentucky)
LA- Franta Majs (Louisiana State U)
MS- Vaughn Reed (Mississippi State U); oral report only
NC- David Hardy, Soil (North Carolina Department of Ag)
NC- Kristin Hicks, Plant Tissue, Waste, Solutions (North Carolina Department of Ag)
OK- (Oklahoma State U); written report only
PR- not represented
SC- Shannon Alford (Clemson U)
TN- Robert Florence (U of Tennessee)
TX- Tony Provin (Texas A&M U); oral report only
VA- not represented
WV- not represented



**Arkansas (University of Arkansas Soil Testing and Research Laboratories, Marianna & Fayetteville)
Nathan Slaton, Cindy Herron, Diane Lafex, & Cheri Villines**

- The number of total samples analyzed by the Marianna Soil Test Laboratory was 195,948 (179,604 client samples and 16,344 quality control samples) in 2022 a slight increase from total samples analyzed (183,264) in 2021. Grid samples accounted for 78% of the client samples in 2022. Then submitted soil samples represented an estimated 1.18 million acres. The lab broke records for the number of samples analyzed in October (53,136) and November (52,992). The previous monthly record 51,696 samples in November 2017.
- Information on grid soil sample size was collected by the LIMS in 2021. Grids representing 2.5 acres comprised 77% of the submitted grid samples followed by grid sizes of 5 acres (9.9%), 2 acres (7.5%) and grid sizes of 1, 4, and 10 acres each accounted for $\leq 1.7\%$ of the grid samples.
- Soil sample shipping with UPS (used by 14 counties and the lab) increased nearly 5x to ~\$60,000 in 2022 when a university contract was not renewed. Efforts to manage the soil shipping costs through UPS have been initiated in 2023.
- October, November, and December are the months when most soil samples are submitted (see figure below).





- We continue to make programming improvements to the LabLite LIMS system. The LIMS has not yet been completed for all analyses at the Fayetteville Laboratory.
- The total number of samples across all sample types submitted to the Fayetteville Agricultural Diagnostic Lab decreased in 2022 compared to prior year 2019 (Table 1). This is due in part to instrument breakdowns that could not be corrected on a timely basis.
- The Fayetteville Lab received new HVAC unit.
- The annual summaries of soil-test data and selected soil fertility and plant nutrition research are published in the 2022 Wayne Sabbe Arkansas Fertility Studies (Research Series 692), which is available online https://bpb-us-e1.wpmucdn.com/wordpressua.uark.edu/dist/3/599/files/2023/02/692_Sabbe_Arkansas_Soil_Fertility_Studies_2022.pdf.
- Both the Fayetteville and Marianna labs continue to be enrolled with the ALP Proficiency program. Other proficiency programs: Minnesota Manure Analysis and National Forage Testing (Fayetteville), and Minnesota Soil Certification (Marianna and Fayetteville)
- Dr. Bronc Finch (Cooperative Extension Service) and Dr. Gerson Drescher (Agricultural Experiment Station & Teaching) were hired as new soil fertility/nutrient management faculty in 2022.
- The soil-testing program funded about \$450,000 in research for the 2023-2024 funding cycle.
- New SPECTRO ICAPs (replacements for existing units) were added to each lab in 2022 (ARCOS II for Marianna and ARCOS III for Fayetteville). The Fayetteville lab is also adding a new Elementar Rapid N Exceed and a Skalar Primacs SNC-100.
- Finding workers for full-time and seasonal hourly positions continues to be a significant challenge for the Marianna Soil Test Lab. We currently have one lab position open at Fayetteville and 2 positions open at Marianna.

Table 1. Laboratory analyses performed by the University of Arkansas Fayetteville laboratory during 2019, 2020, 2021, and 2022 (January-December).

Sample Category	2019	2020	2021	2022
Forage/Feed	1,879	1,487	1,468	2,154
Diagnostic Plant	292	459	395	646
Diagnostic Soil	200	107	176	132
Manures-Total	961	960	914	802
Strawberry Monitoring	224	246	194	132
Growing Media	24	160	157	172
Plant Samples	7,368	6,579	8,440	6,336
Soil Samples	3,387	5,010	4,144	2,928
Prepared Samples	3,389	4,824	1,816	2,053
Totals	17,724	19,690	17,704	15,412

**Annual Report of Soil Testing Activities to SERA-6
June 2023
Auburn, AL**

University of Georgia

Sample numbers and services:

- Soils: 66,541
- Plant tissue: 8,207
- Water: 14,209
- Feed & Forages: 6,348
- Other: 5,480

Lab Personnel numbers or changes:

- Soil Plant Water Laboratory manager left the organization in January 2023, and was replaced internally.
- We have filled two IT positions and are currently advertising two Lab tech positions.

Number of Extension /Research employees working on soil testing/soil fertility:

Two

Equipment/supply notes or upgrades:

- Labfit Automated weighing system for organic matter measurements
- Seal Automated pH robot
- Agilent ICP-OES
- Seal Discrete Analyzer

Software notes or upgrades:

None

Other notes:

Research and Demonstration Projects

AESL faculty and staff have obtained external funding to support numerous research and demonstration projects which will generate over \$200,000 this year. Most of these are cooperative with other UGA research and Extension faculty, and will generate numerous samples for our lab. Projects include the following: radon in water and indoor air; citrus plant tissue analysis; Vidalia onion quality and sulfur nutrition; and variable rate lime application in pastures.

New Initiatives

In addition, AESL has added new services and is exploring potential new testing services. We started offering soil test mapping for precision application of lime and fertilizer. We are also exploring the utility of sap analysis on blueberries, blackberries, and several controlled environment plants (lettuce, tomato, cucumber).

Publications:

Amanda Marabesi, Tim Coolong and **Jason Lessl**. 2023. Cadmium bioconcentration and translocation potential in day neutral and photoperiod sensitive hemp grown hydroponically for the medicinal market. *Journal of Water*. (Accepted June 2023)

Rubio-Ames, Z. & **Lessl, J.** Assessing P fertilization in blueberry production. *Journal of NACAA* (Submitted March 2023).

Amanda Marabesi, Tim Coolong, Savithri Nambeesan, and **Jason Lessl**. Influence of cadmium on plant growth and cannabinoid content in hydroponically grown hemp. 2023. *Frontiers in Plant Science*. (Accepted May 2023)

Jackson, D., **Lessl, J.**, & Levi M. (2023). Sulfur Leaching Rate Differs Based on Soil Characteristics in the Vidalia Region of Georgia, USA: Implications for Sweet Onion Production. *Communications in Soil Science and Plant Analysis*. Submission ID: 221646697

Saha, U.K., Turner, P., Cooper, **D., Parks, D.**, & Kitto, M. 2022. Long-Term Evaluation of a Reusable Radon-in-Water Proficiency Test. *Journal of the European Radon Association*. Submission ID: 9149 (In editorial check)

Jason Lessl, Daniel Jackson, Tim Coolong and Noelle Fuller. An Introduction to Hemp Chemistry and Lab Results, UGA Extension Circular 1209.

Uttam K. Saha, Gary L. Hawkins, Pamela R. Turner, Laurel L. Dunn. Improving the Condition of Your Drinking Water Well, UGA Extension Bulletin 1152-03

Pamela R. Turner, Derek M. Cooper, **Uttam K. Saha**. Building Radon Safe: How radon resistant new construction (RRNC) can make homes safer and save money, UGA Extension Circular (In review)

Pamela R. Turner, Derek M. Cooper, **Uttam K. Saha**. Safe at Home: Preventing Lung Cancer by Reducing Radon in the home, UGA Extension Circular (In review)

**SERA6 Kentucky Report
June 2023**

The number of samples analyzed in 2022 with the percent change from 2021 is shown below.

Type	Number	% change
Agriculture	20,466	-9
Home lawn and garden	8,753	-7
Commercial horticulture	823	-23
Greenhouse media	49	-64
Animal waste	250	+49
Nutrient solution	145	-35
Soil nitrate	0	
Research samples	8,479	+70
Agricultural Lime	143	+0
Plant tissue	0	
TOTAL	39,108	-21

The Princeton Soil lab was not in operation during 2022 due to the damage from the December 2021 tornado. All samples in Kentucky were sent to the Lexington lab. Two employees worked out of the Caldwell County extension office preparing samples to ship to Lexington, preparing soil reports, and planning for the temporary lab trailer to be operational in 2023.

New web-based software for county extension offices to enter samples and print soil reports is being tested in select counties. The function for entering samples was installed in February 2023. The program is planned to be released to all counties in August, 2023.

Partnership was continued with Kentucky Department of Agriculture for testing agricultural limestone. Testing agricultural limestone began in the fall of 2016 and was continued through 2022. 72 quarries were sampled and tested in Spring 2022 and 71 in Fall 2022.

Partnership was continued with Kentucky Department of Agriculture for testing hemp. Hemp testing began in 2017 and continued through 2022. We tested a total of 408 hemp samples in 2022. 214 sample were from KDA and 194 samples were tested to support research at UK.

In support of assessing and improving hemp analysis, a proficiency testing program was initiated in fall 2018 and continued in fall of 2022. CBD oil was a new sample type introduced into the program in 2021. Fifty-five labs were enrolled in the program. Extra samples were also available for sale to laboratories.

Joshua McGrath, UK extension soil fertilizer specialist, left the University for a position in the private sector. Interviews to fill his position are occurring the first week of June.

Annual Report of Soil Testing Activities to SERA-6
June 2023
Auburn, AL

LSU AgCenter
Soil Testing and Plant Analysis Laboratory (STPAL)
Forage Quality Laboratory (FQL)
In attendance: Franta Majs, Md. Rasel Parvej, Brenda Tubana

Sample numbers and services: *This report is for the calendar year 2022*

Soils: 19,829 9.8% up from 2021

Plant tissue: 4,064 50% down from 2021

Potting Media: 191 26% up from 2021

Manure: NA

Forages: 300 comparison with 2021 NA

Lab Personnel numbers or changes:

The STPAL has four full time employees and three student workers. The School of Plant, Environmental, and Soil Sciences (SPESS) provides accounting service and general management for the lab. Since the former STPAL director retired in early 2022, Dr. Franta Majs manages the lab beginning from August 2022. Also, in January 2022 Ms. Mary Sexton replaced Ms. Lauren Liuzza in the Research Associate Specialist position.

In 2021 LSU AgCenter restarted Forage Quality Laboratory. The lab is managed by Dr. Kun-Jun Han and two student workers.

Number of Extension /Research employees working on soil testing/soil fertility:

A copy of each test report is delivered to LSU AgCenter extension agents or regional extension offices. Agents use the analysis results for their extension programs. Therefore, approximately 70 agents are directly or indirectly involved in the soil lab functions. Six research faculties are working in the area of soil fertility, and one research faculty is working on the forage testing.

Equipment/supply notes or upgrades:

The STPAL purchased Spectro ARCOS DSOI to replace one of its instruments. Currently, the lab is awaiting an installation service from the manufacturer.

Software notes or upgrades:

The STPAL has been in the process of revamping its more than 20-year old LIMS.

Other notes:

Changes were proposed on the soil test interpretation table; current recommendations are determined on soil texture basis and will be provided on calculated CEC basis.

The processing of routine soil tests takes five business days; it increases to ten business days during January through May due to more sample analysis requests. The processing time for special test is longer. Other obstacles on remaining current on sample processing schedules were downtime of the old ICP-OES, and repeated repairs of semi-automatic graphite digestion block and dry combustion analyzer.

In March 2023 the SPESS welcomed its newest faculty with focus on coastal / inland water quality and nutrient management, Dr. M.P. Hayes. He was hired at the rank of Assistant Professor (tenure track) with a majority extension and minority research and teaching appointment.

The SPESS is currently advertising for Soil Fertility Specialist with a primary emphasis on specialty crops such as vegetables, fruits, home gardens, turf, pasture, and ornamentals. This position will be at the rank of Assistant Professor (non-tenure track) with a 100% extension appointment.

NCDA&CS Soil Testing Lab
2022 SERA6 State Report
June 5, 2023

Lab Production

In FY 2023 (July 1, 2022 – June 30, 2023) the Soil Testing Section has analyzed samples and 284,060 samples to date. Note there are a few weeks remaining in this fiscal year unaccounted given the date of this report. Based on last fiscal year, production is down about 4%. A total of 33,152 soil test reports have been issued with fertilizer/lime recommendations.

The biggest obstacle for this year's "busy season" was acquiring temporary employees for soil receiving and grinding. One full-time position in the lab was also vacant during this entire time as well. Daily production was approximately 2,880 samples. Turnaround time ranged from a high of 10 weeks as of December 1 in which our peak-season fee (\$4.00 per sample) began to a low of one week. The backlog of fee-based samples was cleared by mid-February.

Equipment & Supplies

The lab purchased a new humic matter robot that was placed online in April. This replaced an older robot that was built in 2004. Automation Techniques is the vendor.

The lab has spent time investigating standards for ICP analysis and is about to make changes.

The lab is investigating changes in the plumbing of its DI water. The present piping of polypropylene is brittle and needs replacing. The new piping will likely be CPVC.

Due to supply chain issues, the lab could no longer find plastic cups for its pH measurement. We have reverted to using paper cups.

Tours

The division has begun giving tours of its labs. No tours had been given since COVID began.

Research

Luke Gatiboni, Asst. Professor in Crop and Soil Sciences at NC State and I are continuing our soil test calibration efforts with P in corn production. Starter placement in corn is also being investigated.

Other

As of December-2022, our Field Services section chief position has been filled with Joe Hudyncia. Joe supervises 12 regional agronomists who cover our state. This position had been vacant since June of 2021. Due to budget concerns, we lost one of these agronomist positions this year.

The division hired a new IT programmer in October- 2022. This position had been vacant since July of 2021.

Respectfully submitted,

David H. Hardy,
Chief of Soil Testing
Assistant Director Agronomic Services- NC Dept. of Agriculture and Consumer Services

**Annual Report of Soil Testing Activities to SERA-6
June 2023
Auburn, AL**

Oklahoma State University

Sample numbers and services:

Soils: 31585

Plant tissue: 3650

Potting Media: 489

Manure: 1064

Forages: 7887

Water: 6015

Lab Personnel numbers or changes:

Six full time plus a few parttime employees. One of the six was hired in 2022.

Number of Extension /Research employees working on soil testing/soil fertility:

2 (one more soil fertility researcher will start August 2023).

Equipment/supply notes or upgrades:

Purchased a LECO 828 CN Analyzer and an automated pH machine has been ordered to replace LabFit.

Software notes or upgrades: *Moved all program from a local server to a cloud off campus.*

Other notes: *Switched from He to Ar on both CN analyzers due to He supply shortage.*



AGRICULTURAL SERVICE LABORATORY

Regulatory Services

South Carolina State Report for SERA-IEG-6 2023 Annual Meeting Shannon Alford- Director, Clemson University Ag Service Lab

Sample Numbers

For the 2022 calendar year, sample numbers returned to normal with Cooperative Extension Offices open throughout the state and no restrictions on lab activities.

Soil: 45,061

Plant Tissue: 524

Feed/Forage: 668

Water: 685

Animal Waste: 755 (SC) + 613 (VA) = 1368

Compost: 63

Research & Commercial: 5081

Total: 54,818

Personnel and Facilities

We have a total of 9 full-time employees, 2 part-time, and 2 federally funded student interns each semester. The Clemson Ag Service Lab was fortunate to submit a funding request to the SC State Legislature and receive funding for recurring and non-recurring request last fiscal cycle (2022-2023), but funds have not been released as of June 2023. Funding should be released soon for some building renovations. We do have one more position to fill from last year's funding- a research chemist. We moved the Fertilizer Regulatory Lab out of the building in February 2023 into a newly renovated lab (I am also director of that lab). That space will be occupied as flex space during renovation and permanently by the Ag Service Lab after renovation.

Equipment

A 2019 Spectro Arcos ICP-OES was inherited from the Fertilizer Lab in Feb 2023 when that lab moved out of the shared building. A new Spectro Arcos was purchased for the Fertilizer Lab, and a new S combustion analyzer from Elementar, both of which the Ag Service Lab can have access to when needed. We plan to purchase a microwave digestion unit once state funding is released.

New Initiatives

A renewed focusing on marketing with one staff member, in addition to me, having partial time allotted to plan and attend events, such as vendor fairs and growers' meetings and working in collaboration with our division's new Marketing Coordinator. We now have a new lab manager, Michael Atkins. We provide ~one lab tour per month for university classes, Master Gardeners, Extension staff, and others.

**Annual Report of Soil Testing Activities in Tennessee to SERA-6
June 2023
Auburn, AL**

University of Tennessee
Robert Florence

Services: The University of Tennessee Soil, Plant, & Pest Center currently offers soil, plant disease, insect ID, plant tissue nutrients, and forage quality analysis. Soil analysis is split about even between farmers and homeowners.

In 2022, 16,101 soil samples were tested for farmers and homeowners. About half the samples are for farmers and half for homeowners. Our price per sample is still at \$15. In addition, 76 greenhouse media soil samples. The SPPC analyzed 219 plant tissue samples, for in season nutrient concentrations.

We normally analyze soil samples by Mehlich-1 but have been using Mehlich-3 for some UT researchers.

Bio-ponds in Metro Nashville are becoming more and more regulated. These bio-ponds are intended to provide a place to slow stormwater runoff and prevent the storm water system from being overwhelmed. In 2022, the center tested 262 Bio-ponds for material venders, engineers, and contractors.

In 2022, 769 Physical plant and insect samples were received and diagnosed. This was down from 925 in 2021. With the use of Pclinic we can now easily record how many digital submissions we had as well. In 2022, there were 460 digital submissions from agents and Tennessee Department of Agriculture.

The Soil, Plant & Pest Center, along with the UT Beef and Forage Center tested 1,133 forage samples in the 2022. This is most forage samples since at least 2016.

The forage report was updated with a bar graph for TDN and CP is now more in scale. The reports now also include the receipt information. The receipt information was needed since we are supposed to give people who send in checks a receipt. Instead of mailing out receipts by hand, it was easier to put the information on the report instead. This will be added to the soil system in the future.

Center Personnel: The lab is currently staffed by a director, two office administrators, one soil analyst, and one plant diagnostician. We usually have one student worker in the soil lab and one student worker in the plant diagnostic lab.

Extension has specialists working on soil/crop nutrition (Dr. Fafa Adotey), corn/soybean production (Dr. Jake), cotton production (Dr. Tyson Raper), tobacco/hemp production (Dr. Dale Richmond), and forage specialist (Dr. Pediro).

Equipment upgrades: Our 18-year-old CE Elantech flash total carbon and nitrogen analyzer died since the last SERA-6 Meeting. We Have been buying filter paper from Midland Scientific.

Software upgrades: We are looking at rebuilding of soil and forage lab information software (STRUT) to include potting media, plant tissue. We hope it will be easier for users to create accounts and submit samples. They can change their crop/plant codes to have dynamic recommendations. We will try to include latitude/longitude upload and download for samples.