SERA-IEG-6 2017 ANNUAL MEETING

UNIVERSITY OF ARKANSAS

FAYETTIVILLE, ARKANSAS

JUNE 18-20, 2017

CHANCELLOR HOTEL, FAYETTIVILLE, AR

AGENDA

SUNDAY, JUNE 18

5:00 – 9:00 PM Sunday Evening Session (Chancellor Hotel, 2nd Floor, Bella Vista Room)

5:00 – 6:00 pm Registration

6:00 – 7:30 pm Welcome by Nathan Slaton followed by Reception and Dinner

7:30 – 8:30 pm State Reports, Moderator Leticia S. Sonon

STATE REPORTS

State Reports were presented in alphabetical order of each state as follow:

Alabama:

The total number of routine soil samples we analyzed is about the same as it was last year (~23,000 routine, 3000 non-routine) for 26,000 samples. Our plant samples were about 1600 and water was about 400. Both of these numbers about what we expected.

Our forage analysis was over 800 and it is about what it was last year this time. We started offering NIR analysis almost two years ago and raised our overall prices from $10.00 per sample to $15.00 for our basic analysis. Now, our customers can submit their samples online, get reports and make payment and have unlimited access to report. We also conducted a very successful Forage Test Advisory Committee meeting that involve academic, extension and producers.

We started offering an **Alabama Soil Quality Index (SQI)** test services. For $50.00, we provide Routine soil

test, ECEC, base saturation, soil group, extractable micronutrients (Cu, Fe, Zn, Mn, B, Pb, Co, Cr, Ba, and Cd), soil organic matter, soil respiration, aggregate stability/slaking test and EC. From grants secured from Alabama Feed and Small Grains, and Soybean Committees and Alabama Cotton commission, we subsidize all of our SQI analysis. Dr. Charles Mitchell who retired on April 1, 2016, was replaced by Dr. Audrey Gamble as Soil Extension Specialist emphasizing on soil quality who came on board on April 1, 2017. Our lab is transitioning to be directly under the Alabama Experiment Station starting this fall. It is expected to stabilize the budgetary management of the lab. An associate lab directory is hired and I will have less direct management of the lab.

Arkansas:

Arkansas (University of Arkansas Soil Testing and Research Laboratories, Marianna & Fayetteville) – Nathan Slaton, Diane Lafex, Cindy Herron, and John Hatten

Laboratory Analyses and Operation

- The Marianna Laboratory analyzed 185,646 client samples in 2016 (January – December), the second most samples ever received in a single year (Table 1). Grid samples (135,426) accounted for 73% of the total samples analyzed at Marianna. October and November continue to be the two busiest months with more than 90,000 analyzed in 2016. Turnaround time in 2016 was <14 days for 96% of the samples received. Sample numbers at the Fayetteville Laboratory were comparable to prior years (Table 1).
- Phase II of the Marianna Lab renovation/construction project was nearly complete in late May 2017.
- Implementation of LabLite LIMS is in progress with programming ongoing and training planned for summer 2017.
- The Fayetteville Lab will add a new NIR instrument this summer.
- The annual summary of soil-test data and selected soil fertility and plant nutrition research was published in the Wayne Sabbe Arkansas http://arkansasagnews.uark.edu/642.pdf Fertility Studies 2016 which is available on-line.

Table 1. Laboratory analyses performed by the University of Arkansas Fayetteville and Marianna laboratories during 2016 (January-December).

Sample Category	Fayetteville Lab	Marianna Lab	Total
Forage/Feed	1,099	--	1,099
Diagnostic Plant	268	--	268
Diagnostic Soil	268	--	268
Manures-Total	1,294	--	1,294
Dry Manures	*1086*	--	*1086*
Liquid Manures	*208*	--	*208*
Strawberry Monitoring	150	--	150
Orchard Monitoring	0	--	0
Growing Media	16	--	16
Plant Samples	6,657	192	6,757

Soil Samples	1,606	185,646	187,252
Prepared Samples	15,971	--	15,971
Totals	28,623	185,746	214,369

Florida:

The total samples for all four labs was 49,030 through 6/16/2017. Last year, the total was 45,781. The change was +7.1%. It breaks down as follows:

	FY15-16	FY16-17	%Change
ARL	25,452	27,429	+7.8%
EWQL	2,998	3,316	+10.6%
ESTL	16,976	17,926	+5.6%
LWTL	355	359	+1.1%

We have had more changes to our laboratory staff. We have hired another chemist for nutrient analysis and ICP analysis. We also have a new temporary hire for nutrient analysis.

New Instrumentation

Our new Elementar VarioMax Cube CNS analyzer and Labfit 3020 pH analyzer are both on line. We have also purchased some new pH meters to replace some aging ones.

Georgia:

Agricultural and Environmental Services Laboratories

(Soil, Plant, and Water Laboratory; Feed and Environmental Water Laboratory;

Crop and Environmental Quality Laboratory)

Sample Numbers:

The total number of samples received at the Agricultural and Environmental Services Laboratories (AESL) of the University of Georgia slightly decreased (~1.2%) relative to last year's submission. The breakdown is shown in the table below.

Sample Type	FY16	FY17	Difference
Soils	65470	64429	-1041
Manures	1316	1397	+81
Waters	8832	9187	+355
Plants	4532	4380	-152
Feed and Forages	4662	7501	+2839
Microbiology	2871	2978	+107
Georgia EPD contract	2126	426	-1700
Other	3283	1686	-1597
TOTAL	93092	91984	-1108

New Initiatives:

- **In process of certifying the AESL laboratory for ISO 17025:2005 accreditation**
  This is in response to the requirement for Georgia fruit and vegetable producers have their wash water routinely analyzed by an ISO certified lab before selling to chain stores.

New Instrumentation/facility:

1) Environmental Express Hot-Block Digestion System

External Audits of Our Work

Environmental Resource Associates (ERA)

- Semi-Annual Proficiency Testing
- Proficiency testing for *Escherichia coli* in water

Minnesota Department of Agriculture Manure Analysis Proficiency (MAP) Program:

- Semi Annual manure proficiency testing for various analytes

National Forage Testing Association (NFTA):

- Laboratory certification for testing forage and hays by wet chemistry and Near-Infrared Spectroscopy (NIRS)

Agricultural Laboratory Proficiency Program (ALP):

- Quarterly proficiency samples of soil and plant

NSI Solutions, Inc.

- Semi-Annual proficiency testing for physical, chemical, and microbiological water analyses

State of Georgia Environmental Protection Division (EPD)

- Laboratory certification to examine drinking water samples for total and fecal coliforms and *Escherichia coli*

United States Geological Survey (USGS)

- Semi-annual interlaboratory comparison of standard reference water samples

American Oil Chemists' Society (AOCS)

- Laboratory certification to examine quality of olive oil

Collaborative Testing Services (CTS)

- Proficiency testing for testing of wine

Kentucky:

(Absent)

Louisiana:

Joint Regional Soil Testing Work Group Meeting
Louisiana State University
School of **P**lant and **E**nvironment **S**oil **S**ciences – **S**oil **T**esting and **P**lant **A**nalysis **L**ab
(SPESS-STPAL)

FY 2016 Report State Report

Fiscal Year 2016					
Test	**Soil**	**Plant**	**Water**	**Soilless Media**	**Total Number of Samples analysis by STPAL For FY 2017**
Number of analyzed	18.005	6,406	171	109	24,691
-/+ over FY 2016	+0.62%	-22.20%	+11.70%	+38.53%	-6.47%

For the FY 2016, STPAL analysis total 24,691 soil, water, and soilless media increase as compare to FY 2016, while plant decrease as compared to FY 2016. Soilless media showed the largest increase, followed by water then soil.

A new SPECTRO ARCOS MV ICAP was purchase and will be delivered at the end of June. The new ICAP will be replacing a SPECTRO CIROS model purchased in 1999.

Mississippi:

For fiscal year 2015-2016, our lab processed 22,019 soil samples and 1735 plant tissue samples. For fiscal year 2016-2017, we tested 18,998 soil samples and 504 plant tissue samples. For soil samples that is a 13% decrease. On July 1, 2016 we increased the price of our soil samples from $6 to $8 per sample. Plant tissue samples remain $15 each. Keith Crouse, Diane Stallings, Ann Rice, and Cindy Malone retired. Keri Jones is the new lab director and Robin Pine is the office associate. There are no plans to hire additional full-time staff. We should be receiving a new ICP machine this year. It will replace an 18 year-old Perkin Elmer that has served the lab well. No other equipment purchases are planned.

Oklahoma:

1. The total number of samples analyzed was 64,102 in 2016. We tested 40,854 soil, 4,787 water, 5,053 forage, 1,277 waste, 20 growth media, and 12,121 various research samples during the year. Sample volumes have been steady for the last 5 years.
2. We replaced our Spectro Cirus with a Spectro Arco ICP.

South Carolina:

Total samples analyzed (Jan-Dec 2016)

1. Soil: 58600
2. Compost: 35
3. Animal waste: 1836
4. Irrigation water: 669
5. Plant tissue: 1935
6. Feed and Forage: 790

New Equipment: two new VWR B2 Analytical Balances for feed/forage, plant tissue, animal waste, and research sample prep and for organic matter determination

Personnel Changes

1. Four retirements during July 2016-June 2017 (soil chemist, office staffer, 2 part-time lab techs)
2. Three new hires during July 2016-June 2017 (soil chemist, office staffer, 1 full-time lab tech)
3. Two new student workers during semester and summer

Outreach: We hosted 13 tours this past year (classes, individuals, extension staffers, Master Gardeners)
Computing: Hired a soil lab-specific consultant, Dick Schroth (Schroth Systems Consulting, Inc) to update our current Access databases.

North Carolina:

NCDA&CS Soil Testing Lab

The Soil Testing Section analyzed 309,210 soil samples in **FY2017**: 284,846 predictive; 16,320 expedited; 2,182 diagnostic; 2742 research; 2496 internal, 272 from witchweed-infested areas; and 352 heavy metals. Reports issued with fertilizer/lime recommendations totaled 36,775.

The lab placed another robot for humic matter analysis online in September of 2016 making it the second one in use. A 6th ICP- Spectro Arcos Multiview (dedicated radial) was also placed online September 2016.

The lab is purchasing a custom-built automated dispenser for the pH station. It will dispense DI water and Mehlich buffer, 12 samples at a time.

Crop codes were created for Industrial hemp and clary sage. We are beginning to develop codes for commercial turf production, truffles and stevia.

The Division continues its efforts in research. The division concluded a lime study for the evaluation of lime source and rates over two growing seasons- cotton and corn rotation. A B study with flue-cured tobacco continued for a second year; the study will conclude in 2017 with the third year. A soil K calibration / validation study began with soybeans and continues for 2017. A similar K project was initiated with corn in 2017. All studies are being conducted in conjunction with faculty from NCSU- Department of Crop

NCDA&CS- Plant tissue, Waste, Solution and Soilless Media (PWSM) Testing Section

For Fiscal Year 2016, we analyzed 10,995 plant samples, 15,918 waste samples and 4,548 solution and media samples for a total of 31,461 samples which was the highest volume since 2007. We had fewer plant samples this year due to the poor wheat crop.

Equipment: We are in the process of switching from TKN to combustion N for liquid animal waste. This is looking to be a lengthy and cumbersome process as we will need approval for NCDEQ for the change in methodology. If anyone has been through this process and would like to offer some input, that would be most welcome. We are likely purchasing an Elementar Rapid Exceed this fiscal year and have evaluated it with our MAP samples, NCDEQ proficiency samples and in-house samples and have been pleased with it's accuracy and precision.

We purchases a second ICP from Spectro. It is an Arcos II Multiview

We bought a new solid waste grinder, replacing a 30 year old wiley mill. It is a variable speed Retsch SM 300 and is much faster and has better capture of particulates.

Methodology: We are in the process of changing our method of measuring plant petiole nitrate from an ion selective nitrate electrode (Thermo) to auto-segmented flow analyzer. That change will likely to take place in the fall. It may affect our recommendations for petiole nitrate nitrogen for strawberries and possibly cotton. The electrode tends to read higher than the colorimeter and the research and recommendations reported in the Reference Sufficiency Ranges for Plant Analysis guide were likely developed using an electrode.

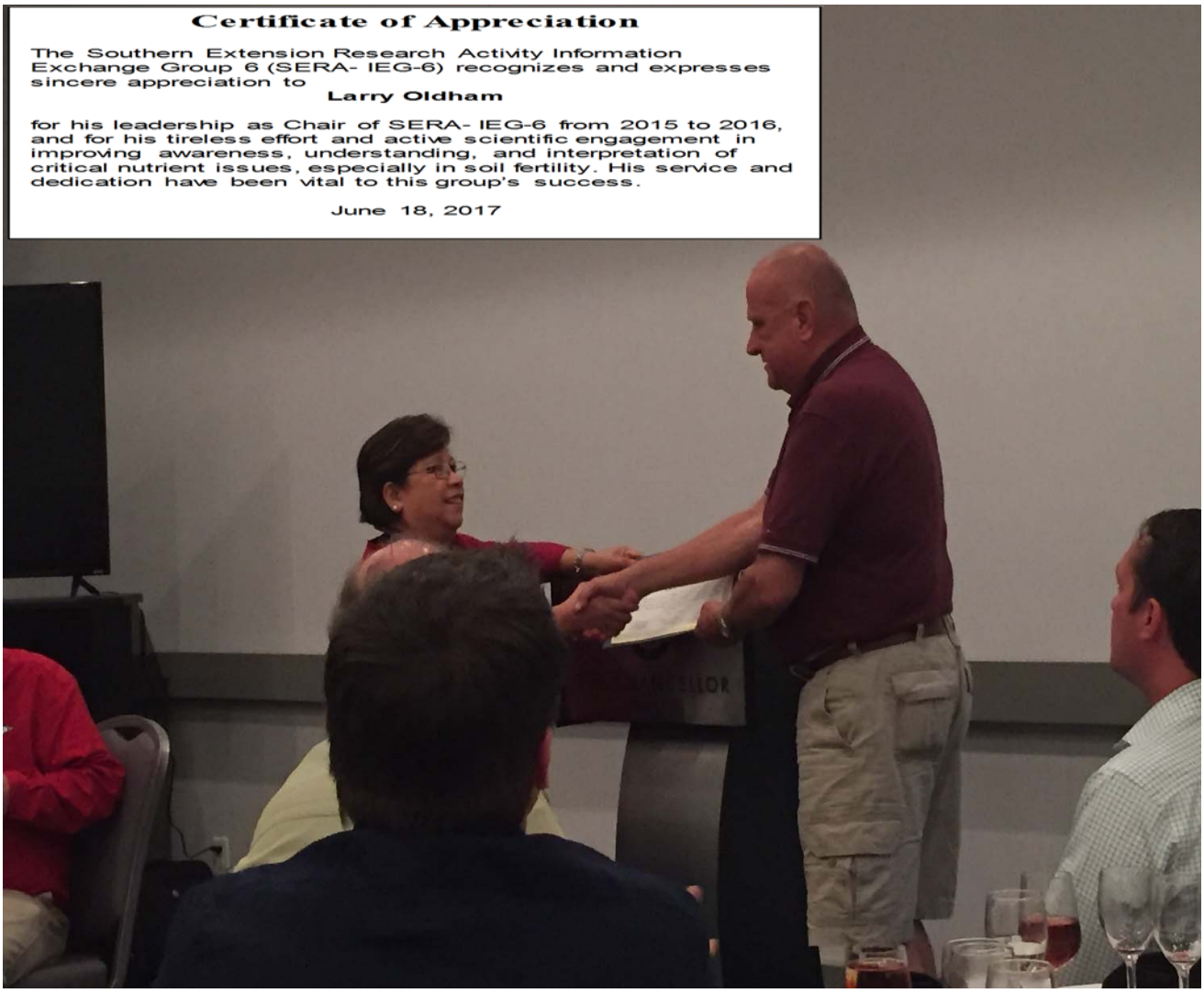
We changed our sufficiency ranges for P and Ca in Fraser Fir based on research done by my predecessor.

Tennessee:

Our lab manager Debbie Joines has fully retired. A new price structure and computer program came into effect as of Jan. 1 of this year. These changes will hopefully help in making the U. T. Soil, Plant and Pest Center more self supporting. Debbies position was upgraded to Director and Dr. Robert Florence has been hired into that position starting July 1. We don't at this time have a full summary of how these price changes have affected our program.

Texas:

(was present but did not submit written State Report)



Certificate of appreciation was given to the outgoing SERA 6 President, Dr. Larry Oldham, by the incoming president, Dr. Laticia Sonon.

AGENDA

June 19 Monday

8:00 – 11:20 AM Technical Session, (Chancellor Room, 2nd Floor, Bella Vista Room), Moderator, Nathan Slaton

- 8:00 – 8:05 am Introduction & Meeting Notes, Dr. Nathan Slaton – University of Arkansas
  Dr. Slaton made important announcement about the intense activities of the day. He provided his cell phone number in case anyone wants to contact him immediately. He also introduced Dr. Mark Cochran who was as the time the Vice President for Agriculture of the University of Arkansas.

- 8:05 – 8:15 am Welcome to Fayetteville, Dr. Mark Cochran – Vice President for Agriculture of the University of Arkansas System Division of Agriculture
  Dr. Cochran appreciated the mission of the SERA 6 Group and welcomed them all. He quoted the Secretary of Agriculture (Mr. Sonny Perdue) who had recognized the importance science to agriculture. He emphasized the importance of sound science to rediscover solutions for the challenges of our time. Dr. Cochran appreciated SERA 6 for providing impartial source of scientific data, for sharing data that are based on local tests. He reminded the group a close link between basic and applied research that will eventually be used to solve practical problems that will benefit the society. He also valued the existence of public soil testing labs even though they do compete with private lab. Dr. Cochran reminded the group to expanded the scope of public soil labs by addressing the needs of nutrient management and environmental quality. He concluded his welcome speech by again quoting the Secretary of Agriculture who he heard emphasizing data analytics processing for end-user to accelerate cooperation and innovation. He also heard him say to eliminate bad regulations and celebrate business transaction or sell. His last words were to be scientific, quality data producers and users that will create job and leaders in the agricultural industry.
- 8:15 – 8:55 am Soil and Leaf Analysis Indicators of Corn Potassium Fertility – Dr. Robert Miller, Colorado State University
  Dr. Miller highlighted the three segments of soil test: (a) sampling, (b) testing (method) and interpretation. He noted the three ways K is taken up by plants as mass flow, diffusion and interception. He presented that 90% of K reaches plants by diffusion. Dr. Miller presented data from different locations and finally suggested that many factors affect K soil and plant analysis. He emphasized the importance of drought and wet conditions that will affect both tests.
- 8:55 – 9:35 am Turning Data into Decisions: How Grid Soil Sample Results are being used to Make Variable Rate Applications. Dr. Brian Arnall – Oklahoma State University
  He started his presentation with an importance of selection of a technology that will suite a given practitioner. The two most commonly used for variable applications are pH and P. He indicated that P is highly variable in a grid sampling zone. Grid map/zone sampling are provided by different companies. It will be difficult to create a sampling zone if there is a significant difference is less than 1 meter. He conlcluded his presentation by indicating that precision ag is not precise.
- 9:35 – 10:15 am The Importance of Soil Testing to Inform Nutrient Management of a Concentrated Animal Feeding Operation in the Buffalo River Watershed, Dr. Andrew Sharpley – University of Arkansas
  Dr. Sharpley presentation was on C & H hog operation. Arkansas is a Right to Farm state. The potential contamination was assumed as the result of opportunistic flow in the Buffalo River watershed. A grid sampling was established after slurry was applied. The nutrient

management was based on P index. After 3 tons/a application of manure, NO3-N in water increased. He talked about Discover Farm Programs that will reduce the potential pollution from animal manures. He emphasized the importance of proactively addressing potential problems using sound science, unbiased data that will work on threshold values by stakeholders. He concluded by emphasizing the importance of livestock to improve soil quality and soil organic. Dr. Sharpley suggested the use of drones for rapid imagining of watershed and/or ecosystems.

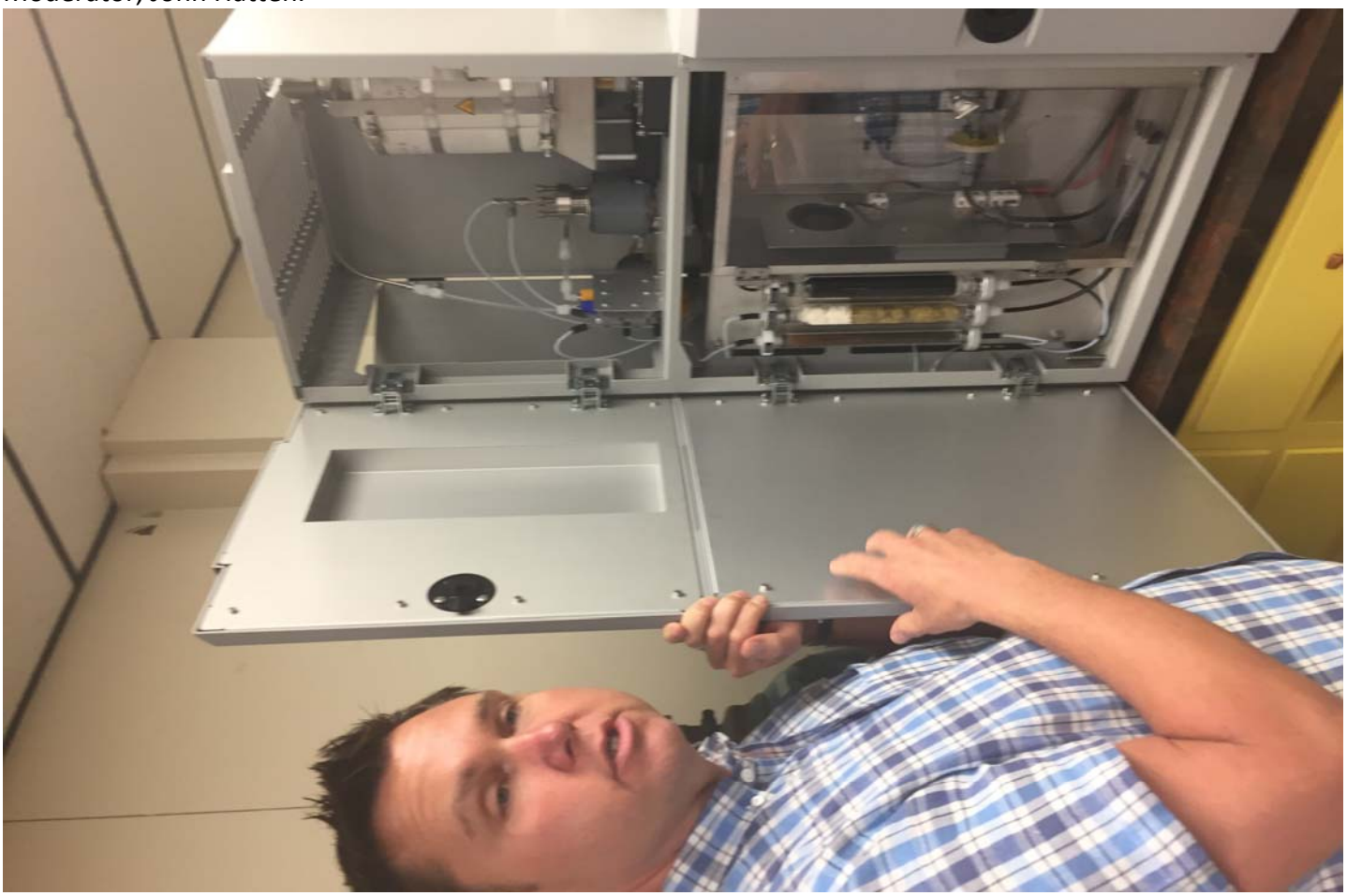
- 10:15 – 10:30 am BREAK
- 10:30 – 11:10 am The Discovery Farms Program in Arkansas, Dr. Mike Daniels – University of Arkansas
  The University of Arkansas has many Discover Farms program spread through the state (see https://aaes.uark.edu/discovery-farms/. The program monitors water quality, sustainability and other parameters even though its overall goal is the determine the effectiveness of soil and water conservation practices on farmers fields.

Lunch 11:20- 12:30

- 11:20 am Leave for Farm
- 11:40 am Lunch at Agri Park (Whole Hog BBQ)

Monday PM Session (Altheimer Building)

12:30 – 5:40 pm Sponsor Presentations, Lab Instrument Demonstrations and Tour (Altheimer Building), Moderator, John Hatten.



12:35 – 12:55 Tour 1-A LECO – Room 210

1:00 – 1:20 Tour 1-B Skalar – Room 110

1:25 – 1:45 Tour 1-C Elementar – Room 324 (NE Bench)

1:55 – 2:15 Tour 2-A Environmental Express – Room 226

2:20 – 2:40 Tour 2-B J-Kem – Room 318

2:45 – 3:05 Tour 2-C Timberline – Room 324 (SE Bench)

3:15 – 3:35 Tour 3-A Texas Scientific – Room 210

3:40 – 4:00 Tour 3-B N-STaR Lab (Trent Roberts) – Room 114

4:05 – 4:25 Tour 3-C Q-Tech – Room 317

4:35 – 4:55 Tour 4-A EA Consumables – Room 226

5:00 – 5:20 Tour 4-B FIAlab Instruments, Inc. – Room 318

5:25 – 5:45 Tour 4-C Seal – Room 324 (NW Bench)

Dinner

- 6:00 pm Return to Hotel
- 6:45 pm Leave Hotel for Dinner – TBD

Tuesday, June 20

8:00 – 8:10 AM (Chancellor Hotel, 2nd Floor, Bella Vista Room)

Technical Session, Moderator, Trent Roberts

8:00 – 8:20 am The New SPECTRO ARCOS M V- Featuring True Axial and Radial Viewing in One Instrument, Dion Tsouride– Spectro.

Bob made presentation on an innovation and updates on a new Spectro Arcos. He predicted it will be one of the best in the competition.

8:20 – 8:50 am Soil Quality Testing at Auburn University Soil Testing Lab, Dr. Gobena Huluka – Auburn University

Dr. Huluka presented the Alabama Soil Quality Index (SQI) that is provided by the lab. He indicated that since the price of the analysis is $50.00 per sample for the basic menu, Alabama commodity groups have provided fund to cover 50% of the cost for the first five samples for Alabama residents. Dr. Huluka Concluded by encouraging SERA 6 to consider soil quality tests and participate in this emerging opportunity.

8:50 – 9:10 am Interpretation of Soybean Leaf and Petiole Potassium Concentrations during Reproductive Growth, Dr. Nathan Slaton – University of Arkansas

Dr. Slaton modified his title to, "Validation of critical soybean tissue K concentrations".

No research for critical K recommendation based on developed models. Preplant and foliar K application are necessary to eliminate K deficiency that will potentially reduce yield and impact quality.

9:10 – 12:00 Administrative Session

9:10 – 9: 50 am Administrative Advisor Reports, Dr. Nathan McKinney – Research Administrative Advisor, University of Arkansas, and Dr. Tom Obreza – Extension Administrative Advisor, University of Florida:

Dr. Tom Obreza:
Thanked SERA-6 leadership and spoke on the following subjects:

1. Explained the role of SERA-6, its administration protocol
2. Overview of budget APLU (association of public and land-grant universities)
3. Tough to get funded from government
4. USDA budget cut
5. Sonny Perdue secretary is good for the Ag
6. He (Mr. Perdue) will push for extension, research and teaching
7. States have good and bad years
8. Many changes in SE US
9. Good budget for some states UGA, NC, but bad for some others
10. Soil health (survey), not very
11. Soil Health institute (stakeholders, scientist, NGO)

Dr. McKinney

Seconded Dr. Obreza and spoke on:

1. Strong a renewal committee for September request
2. Plan for collaborative work
3. Plan how to include stakeholders
4. Dissemination, video, # procedure and methods, # of samples, etc., need to be publicized
5. Outline goals, research and extension

10: 10 – 12:00 pm Reports & Business meeting, Dr. Leticia Sonon (Chair) – University of Georgia

- Dr. Sonon thanked the group from University of Arkansas for wonderfully organizing and hosting the 2017 SERA-IEG-6 meeting. The floor expressed that the talks, food, hotel rooms, and everything else were all wonderful!
- Dr. Sonon urged the senior members of the SERA-6 group to help the new members, who came on board recently, so that they can be successful on their mission and find SERA-6 as a valuable resource for them.
- ALP report was presented by Bob Miller. There were no remarkable items to be included here.

- Dr. Manjula Nathan presented the report from NCERA group. She greatly appreciated the role of administrators of the SERA-6 group to support the activities of the soil testing services. The NCERA does not have soil testing services from all of the Land Grant Universities included in it. Once in two years, the NCERA organizes a workshop in Des Moines, Iowa for training and research on soil testing, soil fertility, and crop production. Generally about 100 participants representing private labs, consultants, and other stakeholders join this workshop and appreciate it very much. NCERA is revising their Handbook for Fertilizer Recommendations. The NCERA is also working on a white paper to emphasize the importance of soil testing services from the Land Grant Universities. Dr. Nathan expressed the need for a SERA-6 representative to join NCERA annual meeting just like she does in it in the SERA-6 meeting representing NCERA group.
- Dr. Sonon reported to the group about the inability of the University of Puerto Rico to organize a SERA-6 meeting due to their awkward financial situation.
- The next meeting in 2018 will be hosted by the University of Georgia group. The group favored a "Sunday to Tuesday" annual meeting as it is now instead of changing it to "Monday to Wednesday". The group also recommended the meeting to start from either 1st or 2nd Sunday of June avoiding 3rd Sunday, which is "Father's Day". The group favored a tentative start date of June 10th for the 2018 SERA-6 Annual Meeting at UGA.
- Dr. Sonon will be soliciting Theme for the 2018 meeting soon. She will be also soliciting ideas for structuring the meeting.
- Dr. Sonon requested the group to send publications to her that would merit posting on the SERA-6 website for the benefit of the group and beyond. She also emphasized to develop a way to emphasize the impact of the SERA-6 group. Dr. Sonon also encouraged any kind of contributions from the group members so that SERA-6 could be regarded as one of the most accomplishing organization in the nation.
- The SEARA-6 renewal document used in 2012 for the renewal of the group's activities is available in the NCSU website (http://saaesd.ncsu.edu/). The 2017 renewal paper work could be prepared using that base document rather than writing a whole new document.
- The $15,000 award application for excellence in extension should be prepared and submitted as advised by Dr. McKinney.

The 2017 participant list is posted to the website

ADJOURN

Compiled by Gobi Huluka, Leticia Sonon and Uttam