SERA-IEG-6
Nutrient Analysis of Soils, Plants, Water, and Waste Materials
Southern Extension and Research Activity Information Exchange Group 6
Annual Meeting, June 3-5, 2007, Auburn University, Auburn, AL

In Attendance:

1. Administrative:
Hailin Zhang, Chairman
Rao Mylavarapu, Vice-chairFrank Sikora, secretaryDavid Kissel, Administrative Advisor, Extension

2. Local host: Charlie Mitchell

3. State Representatives: See Participants Listing

4. Sponsorship:
a. Spectro - Bob Dussich
b. Magnolia Scientific - Mark Johnson
c. Labfit - Bob Isaac
e. MapShots - Ted Macy

June 3, 2007, Sunday

-Registration and Social

-Interaction with representatives of sponsoring companies

June 4, 2007, Monday

8:00 AM. Charlie Mitchell invited everyone to the meeting. Dr. Richard Guthrie (Dean of the A.U. College of Agriculture and Director of the Alabama Agricultural Experiment Station) and Dr. Gaines Smith (Director of the Alabama Cooperative Extension System) provided welcoming comments.

Dr. Fred Adams attended the meeting along with Clyde Evans. Dr. Adams provided a short presentation on the history of his development of the Adams-Evans buffer.

Dave Kissel provided the SERA6 administrative report. The group is up for its 5 year extension. The proposal for the extension will be evaluated by the administrative group in September. Mark Hussey is the other administrative representative to the group but this will likely change since Mark was promoted to a new position at Texas A&M.

8:50 AM. Hailin Zhang (current chair of SERA6) began moderating the technical presentations summarized below.

Near Infrared Spectral Reflectance for diagnostic soil/tissue testing
Rao Mylavarapu, UFL
--Rao presented work on use of NIR for providing routine soil tests. There were questions and discussion about what is actually measured with NIR and how it could detect nutrients without covalent bonding or discern OH stretching between water and soil organic matter.

Predicting Runoff of suspended solids and particulate P using soil turbidity and electrical conductivity measurements
Jim Wang, LSU
--Jim presented work on developing a simple laboratory test of measuring soil solid suspensions in order to predict soil erosion potential and P runoff in the field.

Soil pH and buffer pH methodology: water and SMP/Sikora buffer reaction time with soil and a laboratory survey
Frank Sikora, UK
--Frank presented thoughts on timing issues related to water and buffer pH. This issue of timing was discussed in regards to time buffer is mixed with soil and the required standing time for SMP (or Sikora) buffer with soil before pH measurement. The timing issue is important with adoption of new automated pH equipment. A laboratory survey on pH methodology was also proposed.

Assessing Cotton Potassium Fertility on Alabama Blackbelt Soils"
Gobi Huluka and Charles Mitchell, Auburn U.--Gobi presented field calibration research on potassium in the vertisols of the Blackbelt region in Alabama.

Status of soil test calibration in the South
Leticia S. Sonon, UGA and Hailin Zhang, OSU
--Leticia presented results of a survey assessing the status of soil test calibration in the EPA southern region. The survey was initiated from a CSREES water quality meeting a couple years ago. The goal

is to develop a paper from the survey that will highlight the need for more soil fertility calibration research to support efficient nutrient use and minimize environmental loss of nutrients.

Managing nutrients with RAMP calibration strips
Hailin Zhang, OSU
--Hailin presented research on the use of RAMP calibration strips in the field for wheat and other crops. The calibration strips are developed by applying increased rates of N along a linear transect. The visual appearance of the crop is used as a tool to assess additional N needs during the growing season. Considerable discussion centered around whether the visual appearance of crop greenness was directly related to N needs to maximize yield.

12:00 NOON. Lunch.

1:00 PM. University of Georgia presented work they have conducted on marketing soil testing in their state.

Paul Vendrell presented soil test videos developed under funding from the CSREES Southern Region Water Quality Program and UGA Extension. A full-length video and 30 to 60 second shots were developed. The 30 to 60 second shots are planned to be aired on the public broadcasting network. The videos advertise the web address of www.soiltest123.com which directs people to a website with a map of the EPA southeastern region. A click on a state will direct the user to the state laboratory web site. The videos are available to each state for modification.

Leticia Sonon presented work on a mailer package that can be sent to individuals wanting a soil test. The soil test reports will be sent back to the county extension office. Kathy also presented Clemson experience with these mailer packages. Kathy reported selling 300 of the packages in the last year.

2:00 PM Charles Mitchell coordinated a panel discussion on challenges of data reporting for precision ag. programs

Shannon Norwood and Amy Winstead (Regional Extension Agents) provided a remote presentation of the abilities of Mapshots to work with the University soil test laboratories to provide soil test results to precision agriculture farmers in a format that is suitable for the computer software that is used. Five stated needs for these farmers were: 1. data available on the internet, 2. email notification on when data is available, 3. options on formats available for the data, 4. ability to upload sample information to the lab in electronic format,

and 5. quick turnaround time. Ted Macy from Mapshots was present at the local meeting site and provided a presentation on the details of the software they use and what they need to identify each sample.

3:00 to 6:00 PM

Toured the new ALFA Ag Services laboratory and Charlie Mitchell provided a tour of long-term agronomic research plots.

June 5, 2007, Tuesday

General reports

The meeting next year will be the joint meeting with NCR-13 and NEC-67 and will be held in Nashville, TN. Discussions were held on the best time in June and the group settled on the third or forth week. After the meeting, Hailin discussed the meeting with the chair of the other regional committees and dates of June 22-25, 2008 were decided upon.

The meeting in 2009 will be hosted by Texas at College Station the second week of June or suitable dates close to that determined by Tony.

David Kissel announced a position opening at the University of Georgia on soil fertility calibration work with vegetables.

David Kissel also announced a laboratory workshop to be held at the University of Georgia in September that is being organized by Bob Miller.

Publication status reports

Charlie Mitchell passed out a draft of a cotton publication prepared for a southern cooperative series bulletin to summarize soil fertility research on coastal plain soils. Discussions were held on enlisting other authors to help with various sections of the publication. David Kissel volunteered for the pH and lime section. A completed draft is to be completed by the end of the year.

David Kissel reported no progress on the CEC Fact Sheet.

Frank Sikora reported the fact sheet on the SMP buffer replacement has been completed and is currently on the web.

Frank Sikora reported on a draft fact sheet on ICP vs colorimetric analysis for P in Mehlich 1 and 3 extracts from a cooperative study conducted a few years ago. Considerable discussion was held on

what to prepare in the fact sheet for how laboratories proceeded with interpreting ICP results when making the move form colorimetry to ICP. This fact sheet is to be completed by next year's meeting.

Debbie Joines presented work on a fact sheet on copper deficiency in cattle that is exacerbated by high sulfur in the forage. The fact sheet will be put together with current information and be finished by next year.

Paul Vendrell presented results of a survey on water analyses conducted by the laboratories in the group. Analysis of irrigation water is what most everyone conducts. Discussions were held on the need for fact sheets to cover methodology and interpretation of water analyses. A team was developed with Paul as chair including Jim Wang, Gobi Huluka, Rao Mylavarapu, Tony Provin, and Hailin Zhang. This initiative on water analysis was mentioned to be included in the update of our 5 year plan.

The series 190 bulletin summarizing soil test procedures used at the various southeastern laboratories is currently in draft version on the web. The bulletin is will be revised as needed.

Other Needs

Tony Provin mentioned needs to look at urban soil inputs on soil quality.

David Hardy indicated a need for more quantitative recommendations on sulfur or alum additions for decreasing soil pH. Leticia Sonon mentioned some research she is conducting in this area. David and Leticia will work on a fact sheet in this area.

Kathy Moore mentioned a fact sheet was ready for review on the Moore-Sikora buffer that can be used in place the Adams-Evans buffer for lime recommendation. Debbie Joines and Larry Oldham agreed to review the fact sheet.

Charlie Mitchell mentioned a need to update the organic matter fact sheet. Information can be included on quick tests for organic matter and the importance of organic matter in crop production. Volunteers for developing a fact sheet on this were Charlie Mitchell, Rao Mylavarapu, Tony Provin, Jim Wang, and David Hardy.

NCR-13 update

Manjula Nathan presented an update on NCR-13 activities. The committee is developing a new methods manual where separate methods will be presented for ICP and colorimetric analysis of P in

Mehlich3.

NAPT report

Manjula Nathan reported on the NAPT committee. She gave an update on the PAP program which is a program to submit double-blind samples to laboratories. The program was developed from a request from the NRCS to have a means of checking on the performance of a laboratory. Several voiced concerns about the NAPT program which are summarized below.

1. The program should be administered by an individual whose full-time responsibility is the NAPT program. Having a program administered part-time dilutes the effectiveness of the program.

2. Long response time on emails sent to the program administrator.

3. The program administrator should be more active in attending the SERA-6 meeting.

4. There is strong sentiment that the PAP program is the wrong direction for a voluntary proficiency testing program to take. There are concerns this program is moving toward regulatory control of laboratories.

State Reports

Texas (Tony Provin)
28,295 soils, 1869 biosolids (manure), 4830 waters tested. New Elementar was purchased for TOC analysis. A new 10 probe automated pH instrument has been purchased.

Tennessee (Hugh Savoy and Debbie Joines)
N rates for corn are being reevaluated. Research is continuing on variable lime application. The soil lab was reorganized. The lab now has plant disease diagnostic responsibility. The new ICP is running good since October.

South Carolina (Kathy Moore)
Dr. JB Jones has been enlisted by Kathy to update soil fertility recommendations in the state. Soil test kits are still available for purchase. Sample numbers are similar to last year.

Oklahoma (Hailin Zhang)
There has been an increase in research and routine testing. About 60,000 samples have been tested last year. A new test of biodiesel fuel on the ICP is being developed. There is currently a search for a department head.

North Carolina (David Hardy and Brenda Cleveland)
Brenda reported on the plants, waste and solution analyses. 18,000 waste samples were analyzed last year which included mostly swine wastes. 15,000 plants samples. 2,000 water samples. Sufficient K ranges in cotton tissue has been redone based on growth stage. David reported on the soils lab. 306,000 soils tested in 2006. Turn around time was improved to 4 to 5 weeks. A new drying oven was purchased that allows soils to be dried overnight. Research being conducted in S in small grains, grape fertility, and PSNT in piedmont for corn.

Mississippi (Larry Oldham and Keith Crouse)
Sample numbers are down. There was concern about arsenic washed up onto soil from the hurricane. Levels of arsenic were found not to be high enough to be a problem. There is a position open for a soybean, cotton, and forage specialist. The NRCS 590 was revised in Mississippi. There continues to be intense AFO/CAFO issues in the state. The poultry industry is down.

Louisiana (Jim Wang, Rodney Henderson, J. Stevens)
17,020 soil samples, 5,671 plant samples, 210 water samples tested in 2006. The database management software was modified to create new reports with nutrient elements not reported in the past. The work was done with requests from the consultant industry. Soil turbidity and electrical conductivity measurements have been evaluated as a potential test to predict P runoff. Research also conducted on plant uptake efficiency indices to screen different crop varieties.

Kentucky (Frank Sikora)
Change in lime recommendations will occur on July 1. Instead of recommending lime with an assumed quality of 67%, lime will be recommended based on 100% quality and calculations will be performed to determined ag lime rates based on quality of the lime. The change is being made because of the varying quality of lime throughout the state. Bill Thom has become the permanent director for the Division of Regulatory Services. A new LabFit pH instrument has been ordered for the Lexington lab.

Florida (Rao Mylavarapu)
A new Perkin Elmer ICP was purchased. A position is open for a full-time manager of the laboratory. The position will be a non-tenured Ph.D. position. Research is being conducted on P requirement of bahiagrass. International projects are underway on water management in India and another project in Costa Rica.

Arkansas (Morteza Mozaffari)
95,325 soil samples tested in 2006. About 21% of these samples were from grid sampling. Beginning in 2006, soil electrical conductivity was measured by request only. A new soil test input form and soil test report form went into effect in 2006.

Georgia (Leticia Sonon)
A total of 89,386 samples have been tested from May 2006 through April 2007. Soil test videos have been completed and are available for other states to use. Research is being conducted in areas of analyzing charcoal in area of producing biofuel from biomass, soluble P in poultry litter for use in a P index, mitigating ammonia release from poultry litter. The Georgia Drinking Water Team has been active in developing extension programming to educate homeowners on wells and quality of drinking water. Cameras are available from this effort to be extended into wells for visual inspection of well quality.

Alabama (Charlie Mitchell and Hamilton Bryant)
There is a shortage of working personnel in the lab. Number of samples tested is about the same. New facilities are very much appreciated by the staff.