SERA-IEG-6
Nutrient Analysis of Soils, Plants, Water, and Waste Materials
Southern Extension and Research Activity Information Exchange Group 6
Annual Meeting, June 22-25, 2008, University of Tennessee, Nashville, TN

This year was a joint meeting with SERA-IEG 6, NEC-17, and NCRA-13

In Attendance:
1. Administrative:
Hailin Zhang, Chairman (Hailin could not make the SERA6 breakout session. The session was chaired by the vice-chair)
Rao Mylavarapu, Vice-chair
Frank Sikora, secretary
David Kissel, Administrative Advisor, Extension
Others:
Charles Mitchell, Gobi Huluka, Steve Phillips, Cindy Herron, Morteza Mozaffari, Robert Miller, Leticia S. Sonon, Rodney Henderson, Keith Crouse, Larry Oldham, Manjula V. Nathan, David Hardy, Brenda Cleveland, J. Benton Jones, Jr., Paul Denton, Debbie Joines, Gary Lessman, Hugh Savoy, Don Tyler, Tony Provin, J. Leon Young, Mervalin Morant

2. Local host: Deborah Joines and Hugh Savoy

3. State Representatives: See Participants Listing

4. Sponsorship:
a. Spectro Analytical – Bob Dussich
b. Labfit - Bob Isaac and Matthew Prentice

June 22, 2008, Sunday

-Registration and Social
Presentations by Spectro and Labfit representatives

June 23, 2008, Monday (joint session with NEC-17 and NCRA-13)

8:00 AM. Hugh Savoy invited everyone to the meeting. Dr. John Wilkerson (Interim Dean for Agricultural Research) gave a presentation outlining future directions for agricultural research at the University of Tennessee.

8:30 AM. Mervalin Morant (national program leader for USDA-CSREES) gave a presentation on the changes occurring in CSREES. Changes are occurring with names of agencies and research directions. Two new initiatives that relate to work in the group are Ecosystem Services and Specialty Crops. Discussion took place on how Universities can get funding on the important work of soil fertility calibration and long term fertility trials.

Dr. Morant's suggested working at the state representative level to stress the importance of this work.

9:15 AM Jan Kotuby-Amacher
NAPT update/PAP program
-- Jan presented an update on NAPT and PAP. Newsletters on the web are going to be updated. She presented some ideas on workshops for lab personnel. Some data in the NAPT reports were summarized. An update on PAP program was provided. The PAP program was developed for NRCS. The PAP program is operating like state regulatory programs. Jan collects the data and provides a summary to NRCS. A grade is also evaluated for the laboratories in PAP.

10:30 AM Morteza Mozaffari, University of Arkansas
Presidedress soil nitrate test and other efforts to improve corn N fertility management in Arkansas.
-- Morteza presented research on the presidedress nitrate test (PSNT) and chlorophyll meter for help in N management for corn.

11:15 AM Kelly Tiller, University of Tennessee
Overview of the Biofuels Initiative in Tennessee
-- Kelly gave a presentation on the Biofuels project at University of Tennessee. Efforts are underway to develop a biofuel production facility in eastern Tennessee using switchgrass as the feedstock. The facility is anticipated to begin producing ethanol from switchgrass in 2012.

12:00 Lunch sponsored by Spectro Analytical and Perkin Elmer Corporation

1:00 PM Quirine Ketterings, Cornell University
Illinois soil N test: New York experiences
-- Quirine presented research on the Illinois soil N test (ISNT). The critical value for ISNT is dependent on soil organic matter. ISNT is a good indicator of N availability if soil sampling after manure application or during sidedress time is avoided. ISNT is not a good indicator at these times because of the abundance of nitrate which is not detected in the ISNT.

1:30 PM Robert Miller, Colorado State University and David Kissel, University of Georgia
-- The influence of salts on the determination of soil:water pH
Bob presented information on obtaining soil pH in 0.01 M $CaCl_2$ highlighting advantages in its use over water such as matrix matching with calibration standards, quicker response time, and less variability in pH from fields with varying salt content throughout the season.

2:00 PM Antonio Mallarino, Iowa State University
Long term soil test P and K trends in relation to nutrient removal

-- Antonio presented field research on quantifying changes in P and K removals using grain concentrations of these elements and yield. Short term changes in soil test values should not be a concern because of year-to-year variability observed.

2:30 PM Donald Tyler, University of Tennessee
Fertility issues in switchgrass production
-- Don presented agronomic research on switchgrass production. Switchgrass can withstand very low soil fertility. Phosphorus and K recommendations are only required if soil test levels are in the low range. No lime is recommended with pH 5 and above.

June 24, 2008, Tuesday (joint session with NEC-17 and NCRA-13)

8:00 AM Tour of Highland Rim Research and Education Center (HREC), Springfield, TN
Barry Sims gave a presentation of the research activities at the Research and Education Center.

8:30 AM Forage Fertility/Irrigation, Dr. Leib, Hugh Savoy, and Deborah Joines
Dr. Leib gave a presentation on irrigating bermudagrass. Hugh gave a field presentation on K fertility of bermudagrass. Debbie gave a presentation on S fertilization on bermudagrass.

11:00 AM Conservation Tillage, Donald Tyler, University of Tennessee
Don gave on overview of conservation tillage in Tennessee

12:00 Lunch

1:30 PM Soil Plant and Pest Center, Deborah Joines
A tour of the Soil Plant and Pest Center was provided.

6:00 PM Dinner sponsored by Labfit

June 25, 2008, Wednesday (breakout session for SERA-IEG-6 chaired by Rao Mylavarapu)

8:20 AM Business Meeting

Dave Kissel and Leticia Sonon spoke some words in remembrance of Paul Vendrell who passed away this past year.

David Hardy was nominated and elected to the position of secretary.

Frank Sikora is serving his last year as SERA6 representative on the NAPT board. Tony Provin and Jim Wang were both nominated to the position as the next representative. Through a hand vote, Tony was elected to the position.

Next year's meeting is at Texas A&M University hosted by Tony Provin. The dates set for the meeting were June 22, Monday through June 24, Wednesday.

The national soil test manual effort headed up by the S889 committee of the SSSA was discussed. Bryan Hopkins is the current chair of this committee. There was confusion on the contents of the national manual and the role SERA6 has in its development. Opinions were raised that SERA6 should have a greater role in its development.

Charlie Mitchell presented the progress of the cotton publication entitled "Research Based Soil Test Interpretations and Recommendations for Cotton on Coastal Plain Soil".

Dave Kissel reported no progress on the CEC fact sheet. This topic was decided to be moved of the list of publications until some future date.

Debbie Joines indicated she would put together a fact sheet on copper deficiency in cattle that would summarize what she learned in her graduate research project.

Hugh Savoy indicated he still has not received an ISBN number for the Southern Coop Series 190 revision.

Frank Sikora proposed the work on the ICP vs color-P fact sheet be developed into a research publication.

9:00 AM Technical Session – Oral Presentations

1. Comparison between ICP-P and Colorimetric-P Analysis in Mehlich Extracts, Frank Sikora
Data from the interlaboratory study involving several labs was reviewed and presented. The data from this study along with data from NCR-13 and NAPT was proposed to be combined into a research paper to be submitted to Communications in Soil Science and Plant Analysis.

2. Immediate and Residual Nitrogen Availability from Pelleted Poultry Manure and Urea for Corn, Morteza Mozafferi
Morteza presented field research on pelleted poultry litter which showed the same N availability as non-pelleted poultry litter. About 50% of total N is available the first year and 10 to 20% residual N is available the following year.

3. Fertility of Vinifera Grapes in NC, David Hardy
David presented soil fertility work on grapes.

4. Rapid Determination of the pH Buffering Capacity of Soils, David Kissel.
David presented laboratory research on quantifying the pH buffer capacity of soil using calcium hydroxide additions. Longer reaction times of up to 4 days were found to be needed to achieve pH equilibrium.

10:30 AM Facilitated Discussions

1. Internal Support for State Laboratories, David Kissel
David led a discussion on the importance of state funded soil test laboratories. Advantages discussed were unbiased fertility recommendations and the close ties with research activities. The University of Georgia laboratory recently went through an exercise to justify the existence of the laboratory at the University.
Action Plan – Dave Kissel will chair a subcommittee to develop a white paper on the importance of public soil test laboratories. Members of the subcommittee are Morteza Mozafferi, Hugh Savoy, Larry Oldham, Gobena Huluka, Charlie Mitchell

2. Calibration/correlation for biomass crops, Larry Oldham
Larry led a discussion on agronomic research needed in soil fertility for biomass crops.
Action Plan – Larry Oldham will chair a subcommittee to develop an outline on how best to move forward to coordinate activities in this area. Member of the subcommittee are Morteza Mozafferi, Charlie Mitchell, Don Tyler, and Hailin Zhang.

3. Nutrient management for specialty crops, Tony Provin
The grant proposal soon to come from NRI for funding research in Specialty Crops was discussed. The proposal was thought to emphasize tree nuts and horticultural crops. Tony indicated Texas A&M was developing something for pecans and Rao indicated a group of faculty met at Univ. of Florida to discuss the proposal.
Action Plan – Tony will send out an email soliciting interest in this area.

State Reports

Texas (Tony Provin)
Instrumentation
The Soil, Water and Forage Testing Laboratory has either added or is in the process of adding the following instrumentation to enhance its analytical capacity:
1) Spectro Genesis Radial ICP
2) Spectro Arcos Axial ICP
3) Elementar LiquidTOX II soluble carbon/nitrogen analyzer
4) Lignin 10 cup pH and conductivity robot
5) Bruker Optics NMR Minispin spectrometer for oil seed analysis
6) Metrohm 882 Ion chromotography system for water anion analysis
7) soxhlet exctractor for oil analysis/extractions
Sample analyses
During calendar year 2007, the laboratory processed"
28940 soil, 1333 water, 6579 plant/forage, 1799 biosolid and 8738 research samples.

Tennessee (Debbie Joines)
The Soil, Plant and Pest Center in Nashville experienced a record breaking year in 2007. Plant disease and insect identification services were fee based for the first time ever. 377 producers and homeowners requested assistance with plant disease problems and insect identification was requested by 55 clients. The golf course problem diagnostic service proved a popular choice with 83 requests for assistance in that area. Three producers

requested Endophyte analyses on their pastures. Our technician responded to these requests with recommendations for treatment by providing educational literature along with the diagnosis. The most common method of response was e-mail or by telephone.

Forage and grain analysis at SPPC experienced enormous growth in 2007. Our staff processed 1536 forage and grain samples (65% increase over 2006) for producers across the state. Suffering from severe drought, farmers realized the importance of nutritional information especially due to low feed supplies. The drought also increased likelihood of nitrate poisoning in cattle, thus the Center implemented (first ever) nitrate testing free of charge. Over 1,100 samples were tested for nitrates with results being called back to the producer, in many cases within 24 hours. By fall, work was being done in the laboratory to implement a fee based nitrate analysis to be offered February 2008.

In 2007, samples received for soil testing increased 9% over the previous year for a total of 23,417. This year, we added calcium and magnesium to the Basic soil test, providing more information at the same price of $6.00 per sample. Additional analyses were also added in terms of packages and individual analyses. Soil carbon analysis (Elantech CNS Analyzer purchased in 2007) was added in the fall to take place of Walkley-Black method used for measuring organic matter.

South Carolina (Kathy Moore)

JB Jones has been working with us to update our soil fertility recommendations. We're planning on putting the updated recs in place August 1.

We purchased and installed (in April) a new Spectro ARCOS ICP (radial). We had some initial hardware problems, but it seems to be running smoothly now.

We are 3 years into a 5 year plan to become totally self supporting. Each year, we've been given substantial cuts to our state salary and fringe money. So far, we've been able to handle our building and operating expenses and the state cuts with our lab testing revenue, but at this point, we can't take another cut without going into the red. We are working toward running more samples and we'll be reviewing our fee schedule. Time will tell what's going to happen at the end of the next 2 years.

Oklahoma (Hailin Zhang)

Sample volume increased to about 60,000 in 2007 due to mostly research sample increase. We tested 33,070 soil, 3,529 water, 3,323 forage, 1,021waste, and 18,752 various research samples during the year.

We have 2 Spectro Ciros ICP, 2 Lachats and 2 LECO TruSpec C/N Analyzer in service. We added another FIA and it seems doing well.

Several new positions in soils area (Nutrient management, soil physics, soil and water conservation and management) have been refilled after vacant for several years.

North Carolina (David Hardy and Brenda Cleveland)

The Soil Testing Section analyzed 333,512 soil samples and supplied lime and fertilizer recommendations through 39,155 reports, in an all-time record year. Sample volume was up 9% over FY2006 and surpassed the all-time record of 2001 by 4%. Turn-around time never exceeded 7 weeks and, for much of the peak testing period, samples were processed in about 4 weeks or less.

The following crops accounted for sample volume: tobacco: 2.3%, corn- 17.4%, small grain- 5.3%, soybeans-6.9%, small grain – soybean double-crop-2.5%, peanuts-1.1%, cotton-28.6%, pasture & hay- 6.9%sweet potato- 1.6%, Christmas tree-1.2%, managed turf- 6.9%, homegrounds- 13.7%.

No new purchases were made for the lab; however, we are planning on purchasing a new ICP (Spectro- Arcos) this summer. A new lab supervisor was hired in October, 2007 but he did not make probation so this position is currently open.

The lab is meeting compliance of USDA-APHIS with witchweed concerns by sterilizing soils from farms where infestation is known 5 southeastern counties. This requires segregation of samples by using a red soil box, the purchase of a new sterilization oven and disposal of sterilized soil in a different vessel into the landfill.

We are currently conducting research on P and K recommendations for Leyland Cypress through a greenhouse study in cooperation with Dr. Eric Hinesley and are in our third year of work with studying fertility of vinifera grapes in the Piedmont region of the state in cooperation with Dr. John Havlin. We published our work on pH recommendations for Leyland Cypress in cooperation with Dr. Hinesley: Soil pH and Fertility Affect Growth of Leyland Cypress Christmas Trees (J. Environ. Hort. 26(1):4–8. March 2008). A new crop code was established for Leyland cypress based on this work.

Our public access system for downloading reports and inquiries was revised in 2007. We are still in need of LIMS upgrades and are seeking funds to improve / rewrite LIMS. We have also made available our annual state soil test summary data on-line http://www.ncagr.com/agronomi/STdata2007.htm.

Mississippi (Larry Oldham and Keith Crouse)

The Mississippi State University Extension Service Soil Testing Laboratory ran 25,568 soil and 1,492 tissue samples in the fiscal year 2007-2008. Several new or updated soil fertility and/or soil testing related publications have been posted to MSUcares.com for Print-On-Demand by interested parties. Dr. Jac Varco assumed the duties of Interim Department Head, Plant and Soil Sciences, on April 1, 2008. The laboratory and soil-test based recommendations are Extension functions of the department. All MSU soil-test based recommendations have been incorporated into the nutrient management planning program "Manure Management Planner" which will be deployed in mid-2008 for use by NRCS and Technical Service Planners in a pilot for a national NRCS effort.

Louisiana (Rodney Henderson)

The LSU AgCenter Soil Testing and Plant Analysis Laboratory analyzed 20,488 routine soil samples, 3,539 plant samples and 237 irrigation water samples in 2007. For routine soil analysis, 91% of samples were submitted from producers and 9% from LSU AgCenter researchers and extension personnel. In addition, the lab also analyzed 6,613soil samples for optional tests. These numbers of soil samples reflected an increase of 20% in samples for routine tests submitted from producers but a decrease of 19% in samples for optional tests submission.

The Lab acquired a AS3010 Dual pH Analyser from Labfit which replaced a Labtronics system. This has streamlined the pH measurement.

The Lab evaluated measurements of biological oxygen demand (BOD) at different incubation time of suspension samples and their relations to carbon and nitrogen in the measured system. The purpose was to seek alternatives to speed up BOD measurements. The lab also evaluated residual interaction effects of liming and K fertilization on soybean growth in an acidic Gigger silt loam as well as nutrient uptake efficiency for selected corn and sugarcane varieties based on tissue test, soil test and crop yield.

Kentucky (Frank Sikora)

On July 1st, 2007 agricultural lime recommendations were modified. Lime recommendations used to be based on an average lime quality of 67% RNV (relative neutralizing value). Lime recommendations began being made on a 100% RNV basis with a calculation required to determine agricultural lime recommendation based on the RNV. The change was made to improve lime quality in the state through improved awareness of the value that measures lime quality.

On September 1st, 2007 the Lexington laboratory started using an automated LabFit instrument for determining soil pH and buffer pH.

The number of samples analyzed in 2007 were:

Agriculture, 38,375; Home lawn and garden, 6,925; Commercial horticulture, 696; Greenhouse media, 41; Research, 6,922; Atrazine residue in soil, 12; Animal waste, 260; Nutrient solution, 30; Special research solutions, 1,933;

TOTAL=55,194

Florida (Rao Mylavarapu)

As a part of recent re-structuring, starting October 2007, the research and extension labs have been placed under the newly formed, 'IFAS Analytical Services Laboratories' (ASL). The ASL now comprises of four components- the Environmental Water Quality Laboratory (EWQL) for all NELAP certified analyses, the Analytical Research Laboratory (ARL) for all non-certified analyses, Extension Soil Testing Lab (ESTL) and the Livestock Waste Testing Lab (LWTL) for commercial and non-commercial producers. New space has been identified in the same building and renovated and upgraded, essentially doubling the space available for the labs.

A new Astoria-Pacific autoanalyzer has been purchased in June, 2008 to replace the previous instrument running TKN. The new machine has two channels with two detectors, doubling throughput of the samples.

Three auto-sampler units have been purchased in June 2008 to replace the older auto-samplers for TP/OP, and nitrate instruments.

Due to budget reductions, the lab has picked up salaries of three analysts in the lab from the revenues. As a part of achieving self-sufficiency, it is projected that two more positions will be moved from state funding to lab revenues during the next two years, thereby reducing the state funded lines from 10 to 5.

New test protocols and procedures for Bahiagrass pastures and commercial citrus producers have been developed and implemented

Search for a new Lab Manager is on-going and is expected to be finalized by August, 2008.

Georgia (Leticia Sonon, R. Hitchcock, D.E. Kissel)
The sample testing programs at the University of Georgia is undertaken by the Agricultural and Environmental Services Laboratories (AESL) comprised of three labs: a) Soil, Plant, and Water Lab (SPW), b). Feed and Environmental Water Lab (FEW), and c). Pesticide and Hazardous Waste Lab (PHW). Soil numbers increased by about 8.5% and the overall sample volume increased by 10% in the current reporting period. The combined numbers of samples analyzed at AESL are shown in the table below for the period of May 2007 - April 2008.

Agricultural and Environmental Services Labs Environmental Programs, Publications, and Personnel
A. Development of Tools for Agents to Promote Soil Testing by Urban and Non-Farm Clientele in Georgia
Soil Testing Video. Extramural funding provided a portion of the funds for production of education video to promote soil testing and environmental awareness on the effects of fertilizer nutrients in the environment. A full length video was produced for Georgia as well as six short subject videos for broadcast on Georgia Public Television. Efforts are underway to adapt Georgia's video to other states in the Southern Region.
Soil Test Kit. Soil test kits are available for purchase online. The target audience for this program are the urban clients who lack time to visit their local Extension office. Since its inception in September 2007, the lab has sold about 130 kits.
Soil Testing in the Southern region Website. Along with the video and the soil testing kits is a webpage for ordering kits and as an information resource.
B. Water Testing Education Tools
UGA-Extension Drinking Water Team - The University of Georgia's Extension Drinking Water Team was developed to design and oversee Extension educational programming and to address critical needs in the area of drinking water and human health in Georgia. As part of public education, oral and poster presentations were given at local, regional and national scientific meetings. The presentations were focused on water quality
UGA Well-Cam, Education Video, Self Assessment Tool, Household Water Quality Circulars, Display/Posters on Water Quality and Testing, Water testing by the Ag and Environmental Services Labs, Database and statistical summary capability by county, Specialist support
C. Analysis of Statewide Stream Monitoring Water Samples:
The Agricultural and Environmental Services Laboratories (AESL) provides analytical services and expertise in water analysis to the Environmental Protection Division (EPD) Georgia Department of Natural Resources and the U.S. Geologic Survey (USGS). These services and expert consultation is to facilitate the Ambient Stream Monitoring Program in Georgia, entitled by the U.S. Environmental Protection Agency through the Clean Water Act. Water samples are collected by EPD and USGS, delivered to the AESL, analyzed for various parameters (nutrients, metals, demand, and bacteria), and results reported back in the form of a database. Non-routine analytical methods have been developed for special projects such as Ultimate Biochemical Oxygen Demand and Chlorophyll analysis.
D. Adopt-A-Stream Volunteer Water Analysis and Database Management:
The Ag & Environmental Services Labs has contracted with the Georgia Environmental Protection Division to develop an online database for Adopt-A-Stream, a citizen volunteer water

quality monitoring and stewardship program. The database provides volunteers and citizens access to chemical and biological data for Georgia's streams, lakes, and wetlands. The database, along with the Adopt-A-Stream website, is hosted at the labs.

E. Active Participation in Training Animal Operators and Planners Engaged in Comprehensive Nutrient Management:

A laboratory representative provides yearly trainings to animal operators and planners on how and when to collect soil samples, manure, and water from monitoring wells. Soil and manure testing are needed to perform comprehensive nutrient management planning (CNMP). Utilization of manure or lagoon effluent within a CNMP requires soil and manure testing for measurement of plant available nutrients. Soil test reports give the level of available plant nutrients and provide recommendations for any additional lime and fertilizer nutrients needed to achieve optimum crop yields.

Publications

Plant Analysis Handbook, 2008, revised and edited by Owen Plank

Soil Test Handbook For Georgia, 2008, revised and edited by David Kissel and Leticia Sonon

Personnel:

Dr. Paul Vendrell, program coordinator of the Feeds and Environmental Lab, unexpectedly passed away on March 22, 2008. Dr. Vendrell was the leader of the following programs:

1. Georgia Well Camera Team:

Cameras are being used to inspect the well bores of drinking water wells and determine if well construction inadequacies or material failure are the causes for groundwater contamination. Training workshops on how to operate these cameras were conducted for Extension Agents and Health Department Sanitarians in the four Extension and two Health Department Districts.

2. Southern Region Well Camera Team:

Acquisition of extramural funding through two grants expanded the well camera team throughout the Southern Region. Alabama, Kentucky, Louisiana, Oklahoma, Tennessee, and Texas were equipped with cameras and training workshops in Kentucky, Louisiana, and Texas. Representatives from Tennessee attended Extension Agent training in Georgia and Oklahoma was able to learn to operate on their own. A workshop for Alabama will be conducted in the summer of 2007. A web based network is operating for the purpose of sharing down-well camera videos and a more user friendly network is under construction. The objectives for this program are to develop a team of experts across the Southern Region that share experiences, wellhead-photos, case studies, and down-well videos identifying regional well construction and maintenance problems, and work together to produce Extension education curriculum.

Arkansas (Nancy Wolf)

The U of A Agriculture Diagnostic Service Laboratory located in Fayetteville analyzes plant tissue, manures, forages, research soils and plants as a fee based service.

For calendar year 2007, the total number of samples analyzed was 21,968. A breakdown of the major sample groups are forages-1,343, manure-1,162, plant tissue-8,582, research

soils-3,581, and partially prepared research samples at 7,185. The total number of samples is 4% less than last year. A strawberry monitoring program was started again and is in it's second year. We received 11 kits for a total of 92 petiole and leaf tissue samples from growers in AR, MO, and IL.
We are still running analysis on manures in the Euchi-Spavinaw Watershed and gathering data on water soluble phosphorus using the 1:10 method by Philip Moore as mandated by the courts involved in the poultry litter lawsuit. We are also running some samples at the 1:100 extraction ratio for comparison.
We purchased a used Elementar Rapid N for analysis of Nitrogen on plant tissue and are happy with it. We are still using an Elementar Variomax for C/N analysis on soils, manures, and liquid manures, the Spectro CIROS ICP, and a Skalar SanPlus Autoanalyzer for ammonium and nitrate.

Alabama (Gobena Huluka)
Effective 13 August, 2007, Dr. Gobena Huluka became director for the AU Soil Testing lab in addition to his teaching and research responsibility in Department of Agronomy & Soils.
The lab has purchased vario MACRO CHN analyzer from Elementar in November, 2008 that will support the existing Lico TruSpec CNS analyzer.
Lab reports will be sent only electronically for those with an active e-mail address and requests to do so starting July 14, 2008.
A Soil Testing Lab Advisory Committee that includes individuals associated with AU extension and research, USDA and farmers, was established by the College of Agriculture dean, Dr. Richard Guthrie, in June, 2008. The main purpose of the committee is to meet once in a while and discuss issues pertained to the soil analysis service the lab provides. At advisory capacity, this committee will make necessary suggestions to make soil test services affordable, timely and relevant to the people who will be using the service the lab. A similar AU Advisor Committee for Forage Analysis is also formed. Both committees will be permanent and it is expected to they will play some limited role in increasing the visibility of the services provided by the lab.
The total number of routine soil samples is about what it was last year at this time (about 1000 samples more) and significantly more forage samples are analyzed mainly for researchers.