

NECC1312 – Minutes for 2013 meeting

Recorded and submitted by Stephanie Murphy, Ph.D. (Rutgers Soil Testing Laboratory)

October 3, 2013. Welcome by Bruce Hoskins (ME, who had also arranged the meeting and took the lead in project renewal); also in attendance were: Josh McGrath (MD), Amy Shober (DE), Stephanie Murphy, (Rutgers/New Jersey), Doug Beegle and John Spargo (PA), Quirine Ketterings and Mike Rutzke (Cornell/New York), Tom Morris and Dawn Pettinelli (CT), Solomon Kariuki (MA), Joel Tilley (VT), Olivia Saunders (NH). [Joseph Heckman (Rutgers/New Jersey) joined the group on October 4 morning.] Administrative Advisor, Richard Rhodes III, was not in attendance due to last-minute change of plans.

Minutes of 2012 NECC 1012 in Madison WI were distributed by Bruce Hoskins. Few from this group were able to attend the 2012 meeting, held in conjunction with Joint Soil Testing Workgroup meeting, which was described as a very useful gathering.

Bruce Hoskins provided explanation of renewal of Northeast Soil Testing Coordinating Committee, formerly NECC 1012, now NECC 1312. USDA administrative advisor Richard Rhodes was helpful in developing proposal for its renewal. Copies of the approved project were distributed.

Bruce Hoskins served as Chair; Stephanie Murphy agreed to serve as Secretary and to be Chair at next year's meeting according to precedence.

A short discussion was held about inviting representatives of private laboratories to the meetings. While in some cases there might be some competitive tension between them, it has been pointed out that private laboratories owe a great deal to the University labs in terms of methods development, calibration, and recommendations. There seemed no objection to inviting private labs to participate. Another possibility of including vendors was also discussed; company representative might be allowed a short presentation on its equipment/product. This seemed less favored due to already tight schedule.

MidAtlantic Soil Test and Plant Analysis Working Group

Josh McGrath gave a report on 2013 meeting of MASTPAWG, held in Richmond VA (hosted by Southern States HQ). This is an informal group which includes University labs including some from SERA-7 and NECC-1012/1312 as well as private labs and vendors. Presentations from participants are solicited, which might include research efforts, extension efforts, laboratory issues, or policy, for example. A "virtual lab tour" is presented by one lab each year. Tim Hoerner (Agri Analysis) is the new Chair of that group. New participants to the group included NC, ? [more about 2013 meeting specifically] Tentative dates for 2014 meeting are February 18-19, with snow date of April 22.

North American Proficiency Testing

Bruce gave an update on the Soil Science Society of America's NAFT program, for which he is a board member and in which many of NECC 1312 labs participate. Data submittal deadline for the 3rd quarter just passed (last week). There is a new data input format, more like a spreadsheet, for better efficiency and convenience. An increase in fees is likely. A provisional method is being evaluated (Solvita soil

“microburst” respiration, on agenda for further discussion later); submit data if possible for assessment of repeatability and variability between labs. One recognized weakness from NECC 1312 standpoint is scarcity of Northeast soil types and predominance of western soils as test samples. A soil sampling trip to our region is being planned for 2014 to help correct that deficiency. Also, any lab can contribute soil samples to the program; NAPT will pay for shipment to Utah. A survey was recently released to assess satisfaction and solicit suggestions for improvement. Grant Cardon continues to coordinate NAPT.

ALP intends to include Solvita test next year as part of their proficiency program so that participating laboratories will perform the Solvita test on their test samples and be able to compare results to other labs (proficiency evaluation) as well as evaluating the method. We also discussed possibly ensuring that a sufficient number of labs that use the Morgan and Modified Morgan extraction methods submit nutrient data to the same proficiency testing program. ALP has about 6 modified Morgan labs. NAPT has about 6 Morgan labs and about 4 modified Morgan labs contributing.

PAP still exists for certification where needed but is no longer a double blind approach.

Status of Phosphorus Index

Josh McGrath reported on controversy in Maryland about P management regulation (handout: University of Maryland Phosphorus Management Tool: Technical Users Guide). Previous version was revised (2012). “P-Index” has been replaced by “P-Management Tool” due to some confusion... It was recommended that the tool be included in regulations “by reference”, but it was spelled out in law (which prevents ability to modify as more data/information becomes available). Degree of P saturation requires Mehlich-3 values of Aluminum and Iron. Argument as to whether the new version is over-restrictive, farmers vs. environmentalists. Environmentalists “disagree with the science”. But- 1) _____ 2) _____ 3) P fertilizer sales decreased. One issue: big loss may be offset by minimal losses in another component. What’s acceptable is a political question – not a science question.

From Pennsylvania, continuing P Index work includes modeling, using rational approach and monitoring data to modify and verify new P Index. He noted that physiographic region P Indexes make more sense than a State-wide P index.

Quirine Ketterings reported no controversy regarding the P Index in New York since 2001, though it is recognized that the NY P Index is a planning tool and that in some field situations common sense should override the P index score. This will be addressed in the next version of the NY PI. Cornell is conducting a survey among active CNMP planners to get their feedback on what the next version of the NY P index should address. The P Index is regarded as a tool to guide planning and not a tool that answers the question “Is today the right day to spread manure?”

In Maine, NRCS has adopted the PA version 2 P-Index, modified to reflect different critical test levels in modified Morgan and differing management practices in Maine (example: very little tile drainage in ME).

In Delaware, recommendation for no P application conflicts with the 590 allowance.

In Vermont, P Index has been established since 2005. Data is being collected by NRCS. Fertilizer P is more soluble but exhibits greater adsorption, whereas manure has lower levels of soluble P but is always “leaky”. Discussion on agronomic recommendation vs. environmental risk. There is some uncertainty inherent in analytical values at very high end (not so much for ICP).

New Hampshire – has legislation regulating turf P application (as in all NE states now).

Connecticut – took on phosphorus regulations similar to Massachusetts and New York, except unlike MA, there is not an exemption for organic fertilizers. So any fertilizer that contains 0.67% P is considered a fertilizer containing phosphorus and cannot be used on established lawns unless a soil test (taken within the last 2 years) says P is needed. No regulatory pressure.

NECC website

Posting of Methods – being updated.

Other papers to be included: heavy metals methods reviews, plant tissue Si method, etc.

Location – now hosted by Univ. of Delaware’s website, but it’s been moved around. It should be accessible to at least two people to share responsibility for updating; Amy will help Karen Gartley.

Methods – some Chapters still in near- or final draft need to be uploaded. Appendix, Lead Interpretation table, Nitrate are done. Organic matter Chapter pending. Should plant tissue analysis be included? Mention of Questron Tech, automated perchloric method.

Nitrogen Management

In New York, corn stalk nitrate test (CSNT) is successfully being used; important for silage corn management. Packet of graphs, fact sheets handed out. Research was conducted to determine if sampling procedure could be simplified: importance of length of stalk sample and distance from ground. Transitioning to new protocol and calibration for use of old. Also investigated: stability of stalk nitrate values, to address delivery to lab and storage issue. Stable within a week; refrigerating helps but don’t freeze. Lengthwise quartering of stalk sections does not affect values. 1 sample per acre is recommended and future work will focus on assessment of spatial variability and sampling protocols. A new adaptive nitrogen management approach gives producers in NY options, based on on-farm replicated trials or yield and CSNT data, which may allow for fine-tuning of N management over time.

Adaptive Nutrient Management Committee (Tom M, Josh M, Doug B...) review going through internal review; compiling database from many scientists. NSF 5-year project. Eric Sideman (MOFGA). Woods End. Kansas City NE conference. Social aspects – translating science to policy.

PSNT – challenges with use in wet year (interpretation) – making sense of it. Situation of fertilized vs. manure ground; best with manure systems due to slow release, not as useful with exclusive chemical input systems.

Portable \$300 grain meters; Apple app: Spectrum Tech Green Index, color analysis SPAD equivalent 60%. \$100 Field Scout + \$50 background, vs. chlorophyll meter. Lower acres in no-till, going to recreational tillage; Airway (reduced tillage, greater infiltration, same volatilization). Turbotill. Green Seeker.

Illinois Soil Nitrogen Test (ISNT) – Cornell Fact Sheet 36. Incorporated in the new adaptive management approach (Cornell factsheets 77 and 78). Also an important tool to evaluate if manure can replace the need for starter N fertilizer (Cornell factsheet 67).

Woods End – ammonia paddle used to determine potential NH₃ loss from manure, also being used in new SLAN method (similar to ISNT).

Doug Beegle discussed work to determine best sampling strategy for PSNT testing in fields with manure injection (30" spacing) – how to get mean, or weighted average? Injection zone values to outside zone.

PMN, Potentially mineralizable N (7-day anaerobic incubation) included in ME soil quality package, also used in OR as a spring soil test on spring wheat.

Fall soil NO₃ testing required in MD for fall fertilization of winter wheat; no yield response at 18 ppm.

October 4, NECC 1312 meeting continued

Discussion on N Management Tools – no further discussion

Comparison of Organic/Natural Fertilizer Recommendations

Heckman discussed difficulties in including all/range of strategies involved in improving fertility, especially in the transition period (starting rotation with legumes, e.g.). For N, there is possible use of Chilean nitrate; compost use in excess, especially when dealing with small (less than 5-acre) farms, to get adequate N in first year, with excess P and K. Recommends concentration on use of rotation/cover crop and use of PSNT to monitor.

Rock phosphate at 1000 lb/A approximately every 5 years; suggests Mehlich 3 may over-solubilize P (Hoskins saw no increase in modified Morgan STP after 1000 lb rock phosphate, little or no increase in M3-P; Spargo...). Application of rock phosphate followed by legume may help mobilize P recycled through tissue to organic matter. Discussion on testing of P and actual availability of rock P. Are there differences in calibration for organic vs. chemical fertilization? Assuming a greater micro/biological factor with organic management; but Doug Beegle noted that calibration was not limited to chemical nutrient management.

Liming/pH management – quick and burnt lime is prohibited; limestone OK, same rates as non-organic.

Gypsum is “organic” source of S. S usually not needed due to supply from manure/compost use.

Majority of organic farmers subscribe to use of base saturation percentages; Morris sees this too but doesn't recommend that strategy for fertility management because it is not science-based.

Massachusetts-Northeast Organic Farming Association is pushing it. Spargo says that some organic farmers are moving away from that.

Bone meal/char is more available; increases soil test level; but response?

For K, potassium sulfate which hasn't started as KCl is OK, langbeinite, sylvinit, wood ash (which also contains “lime” (CCE ≈ 100%), Ca, some P). Need for K replenishment when high biomass harvest.

Silicon, a beneficial nutrient (usually not considered essential) which suppresses disease. Wollastonite, which also has liming effect (CCE ≈ 100%); calcium silicate -> silicic acid.

Micronutrients deficiency must demonstrated by soil test before any application for organic production.

Morris: pointed out that use of corn gluten can be 1.5% P₂O₅ but is (often) sold as 9-0-0; P₂O₅ content is not required to be tested if not guaranteed, so it can falsely be sold as P-free. Recommends that fertilizer labeling laws should be changed to have a maximum guarantee as well as the minimum.

Herbicide persistence in compost is a concern for organic management; bioassay of feedstocks might become necessary. (reference to 2011 European Journal.../Don Huber)

Again question of whether there is different calibration/critical level for organic management.

Morris presented graphs and tables (handouts) relating to investigation of stratification of compost applied to turfgrass; compost range of P.

Issue of compost tea: view as an inoculant; no/little other benefit.

High Tunnel Soil Fertility Guidelines and Test Methods

Build-up of nutrient salts in surface. Lack of leaching of sodium, sulfate, nitrate. Drip irrigation not enough to leach. Use of fertigation for K. 3-season tunnels less a problem than 4-season tunnels, which never receive rainfall. There's always water stress in tunnels.

High organic matter amendment (compost) often leads to high P. Peat moss would improve P situation, but it introduces hydrophobicity issues.

Recommend higher fertilization rates for high tunnels compared to field rates – more intensive production. For example 65 T/A tomato vs 20 T/A in field. Nutrient removal rates: 180 lb N/A, 30 lb P/A, 400-500 lb K/A.

Ideally tunnels should be moved every few years to allow leaching. Plant cover crop before moving to mitigate nutrient loss to leaching – especially NO₃.

Considering/researching use of Saturated Media Extract as better procedure for nutrient status, especially for long-term tunnels. Variation within tunnel/between beds is high in long-term tunnels.

Evaluation/Validation of Solvita Soil Test

U. Maine only uses “active C” interpretation. It's correlated with mineralizable N but there is wide spread in the data. Quality of organic matter affects results as well as other soil characteristics such as pH. Research correlates Solvita CO₂ to PMN, but it is still only “potential”. N also is subject to leaching, denitrification, etc. Greater validation is now possible via collection of data in SSSA-NAPT program and in ALP program.

There is more interest from Organic community in Solvita soil testing. There may be possible use in combination with P data to promote limiting addition of excess compost.

Woods End changed calibration of digital color reader, which improved high end readings but greatly lowered active-C readings on the low end of the scale. Interpretation scale was modified by Woods End to compensate for expanded range of active C readings.

State Reports

Summarize Goals for 2014

Proposed upgrades/additions to the website. Comparison of lead extraction data with XRF and coordination of interpretation. ...

2014 Meeting – same place, same approximate time next year (end of Sept./beginning of Oct., Thurs/Fri.)