**NEC-1012 Annual Meeting**

**October 2+3, 2014**

**Dimmick Inn, Milford, PA.**

**Present:** Dawn Pettinelli, Stephany, Bruce Hoskins, Karen Gartley, Amy Shober, Mike Rutzke, Solomon, John Spargo, Quirine Ketterings, Joel Tilley, Joe Heckman

**Thursday: start 1.20 pm, ending at 5.15 pm**

**Minutes**: approved.

**New officers:** Mike elected to organize next meeting. Quirine taking minutes; New York organizes 2015 meeting.

**Review of renewed project**: Renewed by Bruce and Karen through Sept 30, 2018. No further action needed this year.

**Website:** Appendix and nitrate chapters were completed last year and need to be uploaded. Amy will check on access and post. Same for the organic matter chapter (Bruce has updated version). Next updates needed: CEC and Sulfur (Quirine), lead (Dawn). Separate methods: CSNT (Dawn, Tom, Quirine), heavy metals (McBride review – Mike will talk with Murray). John offered to create joint access for all (through BOX) to share paper and other relevant information among members of the group.

**MASTWG:** Mid Atlantic Soil Testing Work Group. Feb 10-11, Richmond, Virginia. John Spargo in charge. Agenda attached. No minutes.

**NAPT, oversight committee representative**: Members of the NAPT Oversight Committee should include one representative from each of the regional research soil and plant analysis workgroups (NCERA-13, NEC-1012, SERA-6, WERA-103). See <http://www.naptprogram.org/about/committee>. There is uncertainty about our representation on the committee…Bruce or John, as John was initially mistakenly listed as a representative of private labs. No minutes from the last meeting. Most often heard complaint now is that customer service is missing with NAPT. Concerns should be voiced to: Grant Cardon (NAPT Coordinator), Scott Fridlund (Chair NAPT Oversight Committee), Susan Chapman and Ellen Bergfeld (ASA headquarters). Soils in NAPT program not necessarily applicable for eastern US (mostly western soils...give K and Ca issues). We need a coordinated effort to address NAPT challenges. Values for K and P tend to be too high. Action: John will attend and voice concerns.

**Morgan and Modified Morgan critical mass:** The ALP and NAPT programs are competing programs and given complains about NAPT, more are thinking about joining ALP. Labs are divided which is impacting “critical mass” needed for quality control to be meaningful, especially for Modified Morgan and Morgan analyses. Modified Morgan: Connecticut, Umass, Maine, Vermont, DairyOne, CNAL, Spectrum, A&L Richmond, AgroAnalyses, Brookside. Morgan: AgroOne, CNAL, Maine, SoilTest (Washington), International Ag Labs. John will check at the MASTWG meeting to see if this list is bigger. Discussion among labs would be good to see if we can create a critical mass.

**P saturation:** Reported by Delaware (DPS based on Mehlich-3 but converted to an oxalate equivalent; 16% DPS based on Mehlich-3 = 40% DPS in oxalate extraction). Maryland uses what Delaware reports. Vermont modifies P guidelines based on modified Morgan Al but does not report a DPS. Penn State not yet reporting but plans to do so in the near future (Mehlich-3 molar ratios; discussion needed with Maryland and Delaware to see if the same method can be used and reported for consistency in the Chesapeake Bay Watershed). Results from Cornell were shown that showed a DPS of 20% equates a Morgan P level of about 80 lbs P/acre, the value at which the current NY P index recommends no more manure or P fertilizer if transport risk is high. Given that a very low percentage of NY fields test greater than 80 lbs P/acre (about 5%), implementation of a Psat in NY will have minimal effect on manure application practices but it could adversely impact farms with fields with very high soil test P but low transport risk. New York concluded that implementing the Psat cutoff in NY does not offer real environmental benefit because it only impacts low risk fields and as a chemical test alone, it fails to account for key, field specific risk considerations of landscape position and relationship of the field to surface waters.

**CEC and Sulfur:** Quirine shared results reported in a new New York paper to be published in Soil Science (in press at the moment) with 0.01 M SrCl2 method to determine available S, ECEC and cation saturation ratios. This method for ECEC determination can be used across soil types (not soil pH specific). Reporting of sulfur is currently done by some labs. Those who report S in their standard soil test report typically report normal ranges. Modified Morgan extractable S is reported by UMass, Maine, Vermont, with Connecticut just having started to analyze for S. No reporting in New Jersey. Penn State and Delaware report Mehlich-3 S. Cornell does not report S currently but developed interpretations based on field trials for soil test S (0.01 M CaCl2 or SrCl2) for alfalfa (offering separate S test). Maine reports quartiles. Penn state reports a normal range between 10 and 25 ppm based on 10-90th percentile (non-normal distribution; started 2002). Connecticut just started to add S and is not reporting interpretations or normal ranges. Delaware reports results but does not report normal ranges or interpretations. Vermont: still deciding how to interpret. UMass reports normal ranges.

**Nitrogen and CSNT:** Quirine shared results of studies related to corn stalk nitrate sampling protocols for harvest and post-harvest processing. Research showed samples can be taken after harvest (within 5 days assuming no rain, tillage or manure application). Sample can be stored in a fridge for 8 days but should not be frozen. An alternative protocol was developed (between 2 and 8 inches above the ground rather than between 6 and 14 inches) but this will require the lab staff to recognize the shorter stalks to divide final results by 1.5 prior to reporting back to clients (so interpretation scales are kept consistent between both sampling methods). A new adaptive management approach was introduced in New York (<http://nmsp.cals.cornell.edu/publications/factsheets/factsheet77.pdf> documents the four options and <http://nmsp.cals.cornell.edu/publications/factsheets/factsheet78.pdf> shows the adaptive management option). Currently work is ongoing with 12 farms in Northern New York to evaluate practical aspects of this approach and to contribute to the evaluation of yield potentials for corn. Additional, work is ongoing to evaluate if yield maps (yield monitoring; within field variability) can be used to shift to more meaningful targeted CSNT sampling in fields. This fall, three fields are being sampled with this targeted sampling protocol (samples in low, medium and high yielding areas within a fields, based on last year’s yield map). This project will continue for another year to collect 2 and 3-year yield maps so yield stability maps can be generated.

**Friday: start 9 am, ending at 12.15 pm**

**Sap analyses for diagnostics:** Mike shared results of his work on sap analyses. The objective is to be able to determine the plants nutrient status before symptoms occur, and before the point where damage is irreversible using a methodology with a quick turnaround time. CONTROL: Plants grown in standard nutrients. Plants were moved to single element deficient solutions for 3 weeks, plant tissue was frozen and then the sap was squeezed from the plant tissue using a garlic press. The sap analysis and traditional wet-ash methods were compared for their ability to pick up on nutrient deficiencies. Sap was diluted 1:11 and analyzed by an axial viewed ICP-AES wave length range about 130 to 900 nm. Sap was diluted 1: 51 for nitrate and ammonium. Results were normalized to Carbon content in the solution. The method shows promise, picking up differences in nutrient levels more than dry ashing would do and Mike is planning to refine methods and develop recommendations for growers over time. Initial target audience is greenhouse production.

**Whole farm balances.** Work in New York with dairy farms resulted in initial benchmarks for N, P and K based on what 75% of farms in the 102 farm dataset were able to achieve. These benchmarks coincide with an animal density limit of 1 au/acre if no export of crops or manure takes place. Paper recently accepted for publication in the Journal of Dairy Science. Current work ongoing with farms with multiple years of data (4 or more years) to evaluate drivers for balances. Working on TIER2 worksheet that allows farms to identify their management options (imports, exports, etc.) based on risk of having a balance that exceeds the 75% benchmarks.

**Mineralization from organic sources:** Discussion on N mineralization methods, standardization of methods and link with reality. Bruce shared the on-line temperature maps of Syngenta that showed that soil temperatures in Maine remained below 70 most of the summer. Joe pointed to the need for follow-up with soil nitrate testing, also outside of “PSNT” timing. Joes discussed organic material use for organic lawn care but stated also that in his experience lawns can be self-sustaining when clippings are left on the field. Bruce showed results of an incubation study with various organic materials. Feather meal is assumed among users to be a slow N source but N release depends on soil temperatures and moisture….different in Maryland from what it would be in Maine. Work by John shows you can burn the crop…not that slow a slow release N source. Bruce showed mineralization after 1, 2, 4, 8, and yet to come 12 and 16 weeks. Results so far soy, blood meal, feather meal all release nitrogen equally quick. The OSU calculator has 4 week mineralization rates for various materials. The OSU estimates from 22C/72F incubation are consistent with 8 weeks in the Maine incubation study at 15C/60F. Anything above 10:1 C:N is slow release, below is quick release. Study by Heather Darby shows data that are consistent with the current study at Maine as well.

**High tunnel work:** Bruce showed big ranges in soil test results in high tunnels for tomatoes reflecting management differences. Currently a project is ongoing in UNH, Vermont, New Hampshire, Penn State, and Maine with the same experimental design, evaluating N and K2O applications on tomatoes. Some treatments had rates high enough to burn the tomato plants. Work is ongoing, including analyses for all three different soil tests (Mehlich-3, Modified Morgan, saturated media extract-SME). Tomato crop removal values are enormous so application rates can be high. A new NESARE grant (K focus first and then N at optimum K; just submitted) would allow for continued work. The N & K in this study is applied as organic approved material so no KCl. There is an IPM component added in the proposal to look at habitat plants for pest control. Petiole sap analysis for nitrate and potassium is included.

**Solvita:** Bruce pointed out issues with solvita results reproducibility for check samples. NAPT (Solvita is currently included as provisionary test) shows big ranges too (8 labs only). Once it is accepted by a state, it is no longer provisionary. Maine is offering it to growers as a soil biological health test (active carbon test). Charlie White (Penn State) and Steve Culman (OSU) are valuating various tests. Quirine showed data from New York (rotation study with compost versus manure versus inorganic fertilizer treatments) but work is still ongoing.

**State reports**

* *Connecticut:* main change is software update; work ongoing
* *Rutgers:* business as usual. Research with K management of turf and disease resistance (antracnose). Development of critical values…40-50 ppm critical values M3 K, tissue 2%. Nutrient removal by Christmas trees. Silicon in fertilizer sources (wollastonite *=* calciumsilicate…also gives powdery mildew suppression). Lead project – methodologies comparison.
* *Maine:* steady at 15-16 k samples/year. Plant, soil, and manure. Winter discount still popular. Same equipment. Work ongoing on greenhouse soil testing and incubation studies for organic materials.
* *Delaware:* some staff changes. More request for stream and water analyses. Same equipment, need new ICP. Studies on K needs of corn. NUE in irrigated corn. P index project. Ditch management work (cleanout).
* *New York:* no extension samples; can’t give recommendations. Soil health program; sample numbers down. Research samples from overseas. Plant tissue analyses has picked up. Total digestion unit helps with quick processing. Water analyses. New focus on horticulture analytical needs including the sap test. New equipment in the lab. Projects ongoing on manure applications methods and rates, greenhouse gas emissions from manured fields, P index, mass balances, GreenSeeker use for N management of corn, spatial variability for corn yields and targeted sampling for CSNT, land application of whey, development of N recommendations (at greenup) for winter cereals as double crops in corn silage rotations, sulfur and potassium testing for alfalfa.
* *Massachusetts:* sample increase, addition of metals and comprehensive composts. Lab moved to new location, climate control and more space.
* *Pennsylvania:* routine testing little down…caused by snow cover. Plant, manure, compost, water testing. New Elementar. New IC being ordered. Projects: PSNT for injected manure, N additives (instinct and MTM). Soybeans, P index, fertilizer forecast project, recoverable P (sorbed P) in lab methodologies, plant tissue digestion study method comparison, sulfur survey for corn (tissue and soils).
* *Vermont:* higher volume this year due to SWCD activities. No maple syrup or sap analyses this time. Most labwork is research or classroom analyses (Don’s classes). Project on adapting to climate changes – P and N losses. No new equipment. Almost ready with new software for recommendations.

**Next meeting dates:** Oct 1 and 2; Riverrock Inn. Mike will coordinate.

**Next joint (NCERA-13, NEC-1012, SERA-6, WERA-103) regional meeting:** will take place in 2016. NEC-1012 needs to host. By lack of a state starting with an O within NEC-1012, Penn State to hosts in 2016. Pff.