

## NECC – 1012 MEETING MINUTES

October 8-9, 2009, Matamoras, PA

Present: Renuka Rao, Quirine Ketterings, Don Ross, Bruce Hoskins, Josh McGrath, Ann Wolf, Dawn Pettinelli, Karen Gartley

The USDA liason, Mervalin Morent, was unable to attend.

Don Ross presided and the meeting was called to order at 1:10 pm, October 8, 2009.

A motion was made to accept last year's minutes. Motion made and seconded.

Next year's meeting will be coordinated by the CT contingency, with Tom Morris as chair and Dawn Pettinelli as secretary.

### **Update from Bruce Hoskins, Maine on Morgan vs. Modified Morgan**

Last year Bruce had discussed Morgan vs. Modified Morgan and the effects of scooping vs. weighing and how soil:solution extraction ratio affects the soil test results. He had written a comparison for the NAPT newsletter. He suggested weighing was the most appropriate for the NAPT soils because they are ground samples from all over the country making some much more dense than others.

A comparison of the two extractants on the amount of soil test K showed that NH<sub>4</sub>Oac extracted more K from high K soils. So there should be separate NAPT results for K data for the two extractants.

Surprisingly, some soils showed a 2 to 3 times difference in K values. Also the NaOac extracted 10 to 30 % more P.

All 6 western labs surveyed use MM and 4 use M. Only 1 or 2 private labs use M.

Bruce did a survey of how western labs measure P, by colorimetric or ICP. Following the western states manual, 20 ml of extracting solution is added to 4 gram samples and they are shaken for 30 minutes. None use charcoal but will refilter if the extract is cloudy. All but 1 western lab surveyed measures P by color.

Cornell uses charcoal in all samples. Charcoal is used to decolorize extracts for better colorimetric analysis. This is not needed for the ICP.

Bruce checked out the differences in results for the 15 vs 30 minute shaking times and did not find much variation.

### **Western Labs**

Perry Lab (MO) – Morgan. Scoops 5cc + 25 mls. Shakes 15 min. Colorimetric P. Reports mg/kg.

NW Ag (WA) – Mod. Morgan. 4 g + 20 mls. Shakes 30 min. Colorimetric-P.

Idaho State – Mod. Morgan. Fixed weight. 30 min. Colorimetric-P

US AGg (WA) - Mod. Morgan. Fixed weight. 15 min. Colorimetric-P

Soiltest Consultants (WA) – 4g + 20 mls. Shake 30 min. Colorimetric-P

Bruce noted that for some samples if calcium is high (calcareous soils) then colorimetric-P is the same or higher than ICP-P. Ann suggested TDS could be removed using filter paper – re-filtering to remove dissolved solids.

There are many interactions between P and other elements in soil including Fe, Ca, Mg, Al, etc. and OM. Because of these many variables it is not reliable to use the ICP for M or MM extracts of P if below 5 ppm or 10 lbs/A.

It was suggested we could use some of our data and publish the results for ICP vs colorimetric P. Perhaps a southern lab, maybe Frank Sikora's, would be interested in participating, perhaps in conjunction with the SERA-6 analogous study of P in M-3 extract. If the Cornell, UMaine and UConn data were looked at for a year or year and a half, that would be at least 15,000 samples from each lab. The Cornell-Morgan data could also be examined for differences due to M vs. MM extractants and use of charcoal vs. no charcoal.

Bruce agreed to begin looking at the data and Renuka and Dawn will send him both ICP and Colorimetric P values for samples analyzed in 2008 and the first half of 2009.

### **Sulfur Testing for Alfalfa Soils, Quirine Ketterings, Cornell**

Alfalfa tissue samples sometimes test deficient in sulfur in New York. The purpose of this study was to find out if there is a sulfur deficiency in New York soils. Sandy soils and those low in organic matter were targeted. 8 trials were set up on farms in New York to see if there is a sulfur response.

Soils were incubated after receiving 6 different S application rates. Sulfur in soils was measured using 6 different extraction solutions by ICP and spectrophotometer. The calcium chloride extract produced a good relationship ( $r^2 = .9439$ ) between the two instruments. It seems like calcium chloride extracts about the same amounts of sulfate for the 4 different soil types and the results are similar whether measured by ICP or spectrophotometer.

The next experiment will look at whether the calcium chloride soil test results relate to plant growth.

### **Lead Screening, Renuka Rao, Cornell**

Dr. Murray McBride developed a power point presentation for the Portland meeting which Renuka presented to us. He was looking for extractions that would provide a reliable estimate for total lead. While the EPA 3050 test is very accurate, it is also expensive (about \$30) and requires specialized equipment. Dr. McBride was looking for a cheaper but reliable alternative. A study was run using modified Morgan, 1 M HNO<sub>3</sub>, sodium citrate and EDTA/DTPA to extract lead and results were compared.

Dr. McBride found that modified Morgan and sodium citrate were not good predictors of lead. But about 96% of the lead obtained by using the EPA 3050 was recovered using the 1N HNO<sub>3</sub>. This test will be offered through Cornell for \$12. More information will be available soon on <http://cwmi.css.cornell.edu/>.

It was also mentioned that we should have better soil lead interpretations in the manual chapter on lead screening and Dawn will revisit this part of the chapter.

### **Hoop Houses and Nutrient Salts, Bruce Hoskins, Maine**

Hoop houses are increasing in popularity for growing both warm season crops like tomatoes and cucumbers and cool season crops such as winter greens. Nutrient salt build ups are common in hoop houses because rainfall is excluded and the irrigation water does not flush out large quantities of nutrients. This happens regardless of whether synthetic or natural/organic sources of nutrients are used.

Problems with high salt levels occur with enough frequency that UMaine offers a new test for hoop house media. That test includes a standard nutrient analysis for field soil plus EC plus nitrate-N and costs \$22. Recommendations are included. Information is available on their website, [http://anlab.umesci.maine.edu/soillab\\_files/prices/soiltest09.pdf](http://anlab.umesci.maine.edu/soillab_files/prices/soiltest09.pdf)

Some labs analyzed these hoop house soils as Saturated Media Extracts (SME) and others (Penn State) also run these as field soils. A suggestion was made to consider including a chapter in the manual on analyzing hoop house soils.

### **Don Ross, Vermont, Soil Fertility Recommendations for Biofuels (oil seed & biomass crops)**

Penn State is just developing recommendations for biofuel crops and also for wildlife food plants and plans to have them on their website soon.

For canola, Maine includes B and S tests and makes sulfur recommendations using the modified Morgan extract.

For canola (ME):

- following grain corn, apply 90 lbs N/A, 50 lbs P<sub>2</sub>O<sub>5</sub>/A & 70 lbs K<sub>2</sub>O/A
- following potatoes, apply 70 lbsN/A and same P & K
- following legume, apply 50 lbsN/A and same P & K

If S is low would apply: 15 lbsS/A

If B tests low, would apply 1-2 lbs actual B via a broadcast application only.

Cornell recommends 50-75 lbsN/A/yr to maintain switchgrass fields and the pH should be about 6.5.

### **Karen Gartley, Delaware, Manual Update**

Karen received CEC chapter from Bruce.

The introduction needs to be updated and Ann will work on it but ideally it would be good to work on it with someone who plans to be here for the next 5 to 10 years. Josh and Karen volunteered.

The question was brought up on how to list the authors/reviewers/editors. Karen will send a list out and those that feel they should be credited should let her know if they are not already included.

We still need updates to the chapters on Organic Matter, Boron and Sulfur. There will probably be some colorimetric methods that are no longer in use and need to be removed.

Karen will send out an updated appendix form for us to fill out. Also we need to make sure the list of committee members is current.

The goal is tentatively to get the most recent version up on the website by October 15<sup>th</sup> and we should be able to download it as individual chapters in pdf file format.

It was discussed where to put some of the other methods like the End of Season Cornstalk Test and Silicon. We thought tissue testing should be put together in a separate spot on the website.

Another test that should be listed is the ISNT and there are plans for a chapter to be added later. According to Quirine, the ISNT and stalk test is offered as a joint package from Cornell.

### **Illinois Soil N Test Update, Quirine, Cornell**

The ISNT's use as a soil N supply indicator is fairly good. 34 trials were set up across the state of NY and while one couldn't separate out the responsive vs. nonresponsive sites by ISNT alone, it was an indicator of response. When adjusted for LOI (500 degrees F) it could better explain some differences in responsiveness.

So how would this fit in with rotations of crops like alfalfa?

A second study was done which looked at the timing of sampling in relation to manure applications. A wait of at least 5 weeks after application is necessary because of peaks in ammonium release. So the best time for sampling would be in the fall after harvest. An 8-inch core can be collected so one could also use this sample for a standard nutrient test with 1 to 2 samples taken per acre.

A rotation study looked at corn after alfalfa for 3 to 4 years. After one year, no response from ISNT. After the 2<sup>nd</sup> year the ISNT was 84% accurate in predicting response. There is much variability within soil type and especially in a dairy state where manure is being added. This test is not a rate predictor but it will give you an indication of N supply from existing OM and that can be taken into account when planning how much N to add.

End of Season Stalk Test – run by Cornell, Delaware, Connecticut for clients, a few by Maine for research purposes. Cornell gets clients to quarter the stalks in the field before sending them in.

Delaware interpretation – if below 2000 ppm, then need more N  
- if > 2000 ppm, sufficient N

There are just two categories because of in field variability.

### **Compost Testing for Homeowners, Karen, Delaware**

Increase in interest in home composting because promotes recycling and yard wastes not wanted in landfills. Some states have Master Composter programs. Often it is recommended to test compost, especially that offered free or at low cost by municipalities. But what would we test for? Typical compost tests offered by PA, ME and NY test for pH, nutrients, SS, OM, C:N, etc and by examining the results, the client can determine if the compost is mature, the amounts of nutrients supplied, etc. Many homeowners are more concerned about contaminants than nutrients. Karen wants to come up with suggestions for homeowner compost testing.

## **Fertilizer Recommendations for Wildlife Food Crops, Josh – NH, Bruce – Maine, Karen - Delaware**

All labs are getting requests for fertilizer recommendations for wildlife food crops. These are often cover crops seeded at conservation rates. States have various recommendations and probably all would work. Soil pH is more important if plants like alfalfa are to be planted. Clover might be a good alternative choice.

This may be a money maker or scam from some seed companies. Some hunting outfitters may be using these plants to bait game which is illegal in some states. Others may just want to improve wildlife habitat.

### **State Reports**

NH – Tom Buub retired. The lab received 1100 commercial samples and 1600 homeowner samples.

VT - Some samples are going to Dairy One and some to Maine. The lab is doing some work just not regular soil fertility samples.

ME – Receiving soils from VT and other places like Woods End for C:N testing. After performing a formal cost analysis, prices were increased. It is \$15 for a standard soil test, \$30 for a manure test and \$45 for a compost test.

Bruce noticed that the Soil Food Web is running Morgans on moist field soil using a volume of soil and not correcting for weight. Also they are reporting P<sub>2</sub>O<sub>5</sub> and not P. He is now doing a study to examine the differences of soil test values using air dry vs. field moist soils.

PA – the lab purchased an Env. Express Autoblock 3 used to digest metals. This is the second one they have and it saves a lot of time. New fecal test for manure.

CT – increase in home vegetable garden samples by 38% since last year. Purchased an Elementar CN analyzer. Regional hardware store chain is sending samples to lab.

DE - ?

NY – Noticed soil test K values rising but not yields. Is more K needed as get closer to optimum levels? Quirine wants to look at soil test K vs. K saturation ratio approach. This year started study on 16 fields with the intention of this being a comparison study – with and without added K. Small plot harvest data will be collected this fall and the initial data set will be summarized in the next month or so. Farmers are very interested and there are funds available for this study as K is expensive. This might be the beginning of a regional study and Quirine may send out a request for participation to see if there is an interest in establishing field trials and finding funding. Also possibility of an incubation type study.

Action Items Recap - Donald S. Ross

1. Bruce will head an effort to publish a comparison of ICP vs.

colorimetric P for Modified Morgans with some data from Morgans. Dawn will supply a CT dataset after the month ends. Quirine, Renuka and Don will supply some data and generally be helpful. A comparison of charcoal vs. no charcoal may also be part of this.

2. Dawn will collect info on northeastern lead testing and interpretation. The goal is to have region-wide similarity. The ranges from Mass will be removed from the table in the on-line chapter because they are quite old and also quite different. The main question is in interpretation. What exactly does 'high' mean?
3. Ann and Josh will edit the Introduction chapter for the on-line methods manual.
4. Karen will email titles to get authors' names listed correctly.
5. Bruce will look at the OM chapter so that it accurately reflects what we actually do. He will solicit and distribute the conversion equations (LOI to OM) that each lab uses but these will not be published in the chapter.
6. Karen will remind us all that the Appendix needs updating and then she will update it.
7. Karen will create an 'auxiliary methods' website that will include such things as Murray McBride's metal extractions methods and any plant methods, e.g. end of season corn stalk nitrate, plant Si. Everyone should send any of these methods to the entire group. Karen will post.
8. Josh will look into organizing a sample exchange for corn stalk nitrate.
9. Quirine will send out a blurb to all on her proposal to expand her potassium studies.
10. Dawn will type up the minutes and distribute to all who attended for feedback.

Next year, CT in charge. Probably the same place would be good. Try to get email dates out early so Joseph and Doug could schedule around this meeting. The room cost \$200 if we stayed at the Best Western in Matamoros and we got a discount rate on the rooms. Bring an LCD projector.

Respectfully submitted,  
Dawn Pettinelli (CT)