

MINUTES - 1986 - MASTPLWG  
MID-ATLANTIC SOIL TESTING/PLANT  
ANALYSIS WORK GROUP  
February 18-19, 1986  
Southern States Building  
Richmond, VA.

WEDNESDAY, Feb 19th

8:30 AM Meeting was called to order by chairman, Don Storer, all participants introduced themselves to the group. Joe Will (host, substituted for Vince Bailey) welcomed everyone to Richmond and gave instructions regarding dining and/or other accommodations.

8:40 AM Sample Exchange: (Bob Lippert, S.C.) passed out results. Results were reviewed by group and corrections made where appropriate and discussed recommendations. Storer: told group about a new Corning combination pH electrode which has shown to be more durable and longer lasting. Delaware expressed similar experience. Cox (N.C.) discussed the ratio for phosphorus by Meh I and Meh 3. Ratio obtained ranged from 1.5 - 2.0. Results from a phosphorus rate study. Flannery (N.J.) showed correlation results between Meh I and Meh 3 and Bray PI. Results of Flannery correlation distributed with minutes to all participants. Storer (Ohio) stated Meh 3 correlates well with NaOAc (Morgan) for boron with Meh 3 extracting 3X over Morgan extract (B). Boron response hard to find. Donohue (Va) commented on Marten's work in Va stating little success with Boron response in Va.

Group discussed recommendations on exchange samples and noted some discrepancy in K although soil test results were similar. It was noted that some fertilizer recommendations were made with yield goals in mind which may account for K-rate differences.

10:30AM: HM and Organic Matter Determination  
Storer (Ohio) - discussed correlation of various OM methods currently being used. Weber (NC) stated OM correlation among labs using the same method was very poor. Weber showed slides on HM/OM from across U.S. run by NCDA Agronomic Lab (HM) and U. of Ga (OM) on 200 samples. An  $r = 0.90$ ,  $r = 0.85$  for converting %HM to weight basis. Relationship sandy soils not very good. Clay soils  $r=0.06$  OM/HM. Discussed herbicide rate relationships with various OM methods. Relationship to methods and

herbicide rates was good even though the slopes differed. High herbicides rates required as HM or OM increases due to complexing of herb with organic matter. Herbicide rates also affected by pH. Questions arose about the relationship between HM and N credit for current crop.

Tucker (N.C.) passed out correlation data for 24 versus 76 hours digestion time for HM. Current method calls for 24 hours. Good correlation between 24-72 hours.

Roy Flannery (N.J.) discussed long-term fertility study - silage corn/soybean rotation rates of N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O in relation to soil test, crop yields. Showed no P response after 7 years where no P applied. Maintaining K with 150 lbs K<sub>2</sub>O and getting most economical yields at this rate. No response in yields when P<sub>2</sub>O<sub>5</sub> applied after 5 years. High P reserve soils can go for a number of years w/o need for P<sub>2</sub>O<sub>5</sub>. Response to K at 150 lbs/acre. Showed decline in yield as K<sub>2</sub>O rate goes up implying Mg deficiency. Leaf K - content (soybeans) responds to rate - no yield response. Mg moving in profile in relationship to K ratio. Summary: No P<sub>2</sub>O<sub>5</sub> response, response to potassium.

Adjourned for lunch.

P.M. Meeting

Nominated Tom Sims chairman for 1987 meeting. Next meeting set for Feb. 18-19, 1987. Soil sample and plant exchange samples will be taken by Ray Tucker (Soil) and Ray Campbell (Plant) for 1987 meeting. Malcolm Sumner (Ga) discussed DRIS system. Explained the rationale regarding the establishment of norms, nutrient ratios etc.

#### PLANT ANALYSIS TOPIC

Flannery (N.J.) Runs tissue analysis for perennial (apple-peaches) crops - and annuals for problem solving Md - does not run plant samples. Delaware no plant analysis. Tucker gave several examples where problem identification has been helpful. Brookside runs about 10,000/year. Va runs 3000/year used for trouble shooting and routine monitoring. Promotes plant analysis to County Agents. A & L runs 5000/year mostly small grains. Campbell (N.C.) states cases where tissue analysis has been used successfully on a variety of crops. Passed out sufficiency ranges from respondent laboratories. Stated references regarding suf-

iciency ranges hard to come by. Storer, Agrico runs plant samples. Furnish mailing lists to clients. Has a number of factors in computer to make final report. Agronomist then reads report and makes additional comments if necessary. Considerable experience in plant analysis through field monitoring.

BREAK

3:45 P.M. Update of u-nutrient findings. Delaware stated more farmer interest in micronutrients on irrigated corn. Bandel (Md) have experienced copper deficiency in ruminant animals. No known response to Cu for crop production. Va - Research program a VPI on u-nutrients showed little Mn response on corn up to 1984. Got a yield increase to banded and foliar applied Mn. Presented research data on Mn research. No response on broadcast Mn application, may be due to inadequate rates. Cu & Zn data on corn presented from Dave Marten's work. Looking at toxic levels - experienced no toxic effects due to high rates. Highest rate (Cu 279 kg/ha), (Zn 560 kg/ha). Va, Seven boron expts on irrigated corn in 1985. Response 1 out of 7 to 1/2 B/acre. Boron response still in question for high yield levels.

General consensus is that u-nutrient not that much of a problem throughout Southeast. Tucker reported on soil test micronutrient, Mn, Zn, Cu studies in North Carolina. Cox talked about research work. Presented research data on Zn.

8:30 A.M. Thursday, Feb 20, 1986

Reviewed plant tissue analysis exchange data. Results in general were very close. Some difference in the interpretation of sufficiency. Flannery (N.J.) Runs NO<sub>3</sub>-N on greenhouse soils and problem situations. Bandel (Md) - does not include N in the soil test. Va stated plant analysis may be the best method to determine N needs as opposed to soil testing. Some research shows residual N carryover and has benefit to the subsequent crop. N soil test more predictive in the North Central and Mid-Western soils. Va runs NO<sub>3</sub>-N for GH samples. Some credit given for chicken litter and legumes.

Sims (Del) gave reference to research papers on N.E. reg. project by:

Fred Magdoff - SSSSAJ 48:1301

Dick Fox - Agron. AJ 77-927

Research papers on nitrogen soil test methods and correlation.

General consensus was that  $\text{NO}_3\text{-N}$  soil tests and their predictive value is very closely associated with soil type and rainfall and will vary from year to year. Brookside Lab (Mark Flock) stated that  $\text{NO}_3\text{-N}$  very popular in Mid-West.

Tucker (N.C.) analyzes  $\text{NO}_3\text{-N}$  for GH and problem soil analysis. Encourage the use of plant analysis for nitrogen monitoring and problem diagnosis.

CHU (A & L) Determines N from D.M.. Analyzes manure and adjust for rate and method of application.

Lippert (S.C.) No  $\text{NO}_3\text{-N}$  test.

Campbell (N.C.) analyzes manures and make recommendations based on test values.

Flannery (N.J.) Poultry 80% N available, Dairy (50-60%). Cornwall publication gives good guidelines for nutrient availability. (Stu Klausner Extension publication).

10:45

MIP vs M3 vs Bray PI &  $\text{NH}_4\text{OAc}$

Flannery (N.J.) M3-DA-Bray PI for phosphorus MI -  $\text{NH}_4\text{OAc}$ . Showed regression equations, copies to be sent to participants. Need calibration data for group review. Cox (N.C.) reported on phosphorus research data comparing critical levels of M3 and MI. Showed yield versus M3 extractable phosphorus. Tucker (N.N.) discussed some M3 - MI comparisons from samples taken from Cox's field tests. Bandel (Md) reported on phosphorus fertility tests on rye. Implications were that the critical level for phosphorus on small grains may be higher. More response to lower phosphorus on no-till (40 lbs) as opposed to conv-till, based on 2" samples for no-till, phosphorus applied in the spring. Conventional phosphorus application broadcast. Donohue (Va) M3 extracting 75% more Mn than MI.

Brookside indicated M3 may be effective for S extractant.

Flannery reported on row spacing plant population and rates on soybeans. Best response to N at early (50 lbs) flowering and (50 lbs) pod fill. Fertilization with N is 30% N (50% urea, 50%  $\text{NH}_4\text{NO}_3$ ). Some response may be obtained with 50 lbs at podfill.

Tom Sims (Del) reported on N recommendations for grain sorghum. Finds that N recommendations currently in use is off. Response at rates greater than 50 lbs thought to be questionable. Assumptions based on Bill Hargraves (U of Ga) research. (Agron J 78 (pg) 72.

Donchue (Va) reported on changes in Zn recommendations related to pH and phosphorus levels.

Group expressed appreciation to Joe Will and Southern States Coop. and to Don Storer - Meeting adjourned.

ENCLOSURES:

Minutes taken and prepared by M. Ray Tucker, Agronomic Division, NCDA. Any error should be brought to the attention of the secretary.