

MINUTES

MID-ATLANTIC SOIL TESTING PLANT ANALYSIS WORKGROUP

SOUTHERN STATES BUILDING

RICHMOND, VIRGINIA

February 17-18 - 1988

Meeting called to order by Chairman Sims, group welcomed by Charles Hubbard, Southern States Rep.

(Program)

Bandel (Md): Discussed manure analysis program, implemented \$4.00 charge on soil testing - reduced sample load by 60 percent. Offer lawn, homeowner, farmer soil test package. Tests vary depending on type of sample. Going to computerized reporting system. Has in house computer for data management, single terminal system.

Involved in nutrient management program. Hope to integrate soil, sludge, manure into one system. State Health of Md. controls application rates. N requirement of crop regulates rate. Heavy metal content and CEC used to regulate rates.

Manure - Started analyzing manures to give better recommendations. Major problem is determining N loss, mineralization etc - makes recommendations difficult as a top-dressing source. Zn and Cu still major concern depending on rate of application. Excellent source of fertilizer if utilized properly. Supplies a nutrient management kit for collecting waste samples. Distributed literature. Developed a spread sheet for use on computer by agents to make recommendations to growers based on nutrient content. Rates take nutrient availability from manures into consideration.

Buriel (Md): Added P.C. to laboratory linked to computer by floppy disk. Plan to go to network system in future, including transmitting to County Extension Offices.

Sims (Del): Discussed soil testing waste amended soils. Guidelines for manure application set up by Dept. Natural Resources and Environmental Control as proposed by consultants cooperating with University Delaware agronomists. Distributed paper published in Environ. Journal. Showed extraction data:

EXTRACTABLE P mg/kg

Meh 1	146 - 1436
Meh 3	268 - 2068
Bray P1	123 - 648
Olsen	83 - 618

11 sites where heavy manure and fert. applied.

Stated soil test labs may be required to become involved in testing waste amended soils. Soil testing laboratories must become involved otherwise, non-agronomist may end up setting the guidelines. Delaware has a moratorium on waste application until guidelines are adopted. Foresees a need for evaluating current extraction methods or developing new methods. Raised several questions regarding responsibility and legal aspects with regard to recommendations. Compared extractants for % of total, by H₂O, Mehlich 1 and Mehlich III. Still much concern about long term effects.

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Taylor (Del): Discussed grain sorghum - soybean/corn rotation in Delaware. Purdue agreed to purchase 4 x 10⁶ bu - for chicken feed. Discount sorghum by 7% due to low xanthophyll content which requires supplementing in feed. Presented N fertility study results (N uptake versus time). Results show 50 lbs N got better seed head production - higher yields. Combination involved various rotation and/or legume combinations, till versus no-till-irrigated-non irrigated field studies. 0-200 N range single application in 25# increments. N-response or single application max at 75 # N/A. Split application maxed at 50 lbs N/A. No response to N following soybeans and watch regardless of application method. Recommend no more than 50 lbs N/A with credit to N contributed by soybeans as previous crop. Response 50-75 # under irrigation.

Plank (Ga): 90-100 lbs N/acre for no-till grain sorghum. No adjustment based on previous crop. Grain sorghum generally follows small grain or continuous grain sorghum. After 2-3 years grain sorghum continuous rotation, no response to N due to contribution of N from return of stover, Would not recommend continuous grain sorghum.

Greg (VA): Potatoes 125-150 kg/ha, 200 lbs P_2O_5 and 300 lbs K_2O at low P and K levels. Rec 50 lbs at planting and 100 lbs at first cultivation. Experimented with split applications in 50 lb increments at planting and as side dressing to a max of 150 lbs for each method of application.

		(X)
	<u>0</u>	<u>50-100-150</u>
(Y)	50	sidedressing (Y), at planting (X)
	100	
	150	

Recommendation of 100-125 lbs at planting is too much N. Rec 100 lbs N/a at planting. Implication is that higher rates of N are too high.

Campbell (NC): Microwave plant digestion. Previous experience with tobacco shows good results. Can digest 22 samples in 38 minutes with conc. HNO_3 (wet ash). Aspirate digest directly into ICP. Intent was to decrease turnaround time by reducing digestion time in addition to prevent fume hood corrosion problems. Animal waste takes availability factors into account.

Donohue (VA): Discussed soil and plant sample exchange. Described soil types. One sample high in copper and zinc. Fertilizer recommendations vary considerably for horticulture crops. Origin of fertilizer rates for hort crops unknown.

Good agreement for all elements using same extractant. Variation in sulfur test, may be due to various methods of extraction and/or development of turbidity.

- THURSDAY -
Business

1989 Meeting 15-16 February in Richmond, VA.
Topic suggestions requested for 1989 meetings.
Ray Campbell - Chairman elect for two years.
(1989-1990).

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Burkman, Bill: Northrop Services. Discussed aspects of acid rain effect on trees. Circulated manual specifying procedures for standardizing test methods for acid rain evaluation.

Storer, Don: Distributed brochures on new pH techniques. (transistor sensor). Introduced in 1988 - Agrico has promise for future evaluation for pH determination. Discussed problems with pH electrodes but agreed that exchange sample pH values didn't indicate a serious problem. Used combination electrode in past but encountered some problems.

New nitrogen analyzer for nitrogen, carbon, and sulfur. Preliminary results look good, other industry and research labs have used it for 4-5 years with good results. As with any high-tech instrument it requires periodic maintenance. Eliminates acid digestion for nitrogen. Screen size of plant material does not appear to have any significant influence (40 mesh grinding).

Tucker (NC): Passed out updated information on Mehlich 3 extractant across the U.S. Correlation results in Mid-Atlantic and NCR-13 were very high. Several labs have converted to M-3. NCR-13 has plans to continue evaluating M-3 with intent of adoption. Distributed revised of Crop Fertilization Based on N.C. Soil Tests.

Encouraged labs considering M-3 to use volume method.

Chu (A & L): Distributed information on soil test report and ratings for each element for a given soil test level. A & L scoops soil and assumes a weight but in reality use a volume. Values as determined by scoop can be converted to volume.

Cations (1N NH_4OAc , P-Bray 1 and 2)
O.M. Wackley Black color method. SMP for acidity, doesn't work on acid Mid-Atlantic soils. Trace elements: S NH_4OAc turb, Zn, Mn, Fe, Cu 0.1N HCl. B. ⁴ Hot water extract.

K, Mg, Ca rated on % saturation - depending on CEC. Based on ideal nutrient ratio by customer demand.

Recommendations based on yield goal. If yield goal is low (100 bu corn) and soil test levels are high, no recommendations are made. High yield goal recommendations are made even when soil test level is high. Use % OM to predict ENR (estimated N release). Potassium (for each CEC unit) adjusted depending on % CEC) Plant analysis results based on sufficiency levels and/or ratios.

Donohue (VA): Discussed soil test summary. Summaries very valuable for farmer meetings and fertility status by crop, county, regions etc. Presented summary data to demonstrate points that can be made from summary. Passed out publication on summary data published by McCollum. Tucker included some phosphorus summary data for 5 leaching tobacco counties in North Carolina.

New Jersey or South Carolina responsible for 1989 soil sample exchange.

Send minutes to Tom Sims.

Plank (GA): Announced International Symposium in Fresno CA in August 13-18, 1989. Agenda not completed.

Meeting adjourned by Tom Sims. Group expressed appreciation to Southern States for hosting the meeting.

Minutes recorded and submitted by M. Ray Tucker. Any error in interpretation and recording of comments was unintentional on the part of Secretary.