

**Minutes of the 1997 Mid-Atlantic Soil  
Testing & Plant Analysis Work Group Annual Meeting**

**February 19-20, 1997  
Southern States Building  
Richmond, Virginia**

**Wednesday, February 19, 1997**

● **Welcome and Introductions**

Steve Donohue called the meeting to order, welcomed everyone and reviewed the agenda for the meeting. Introductions were made and Steve Donohue/Steve Heckendorn were designated as secretary for meeting.

● **Southern States - Steve Patterson**

Steve Patterson from Southern States gave an overview of several Southern States programs, including an update on the Grow Master program and an overview of their current efforts in precision agriculture.

Steve Donohue expressed our appreciation to Southern States for their continued support of this work group.

● **Sample Exchange - Steve Heckendorn, Virginia Tech**

Steve handed out reports on the soil, plant, and manure sample exchange and there was a general discussion of the results. Highlights of that discussion follow:

- Generally good agreement - probably better than past years.
- Some general concern with estimating acidity.
- Large range in lime types from dolomitic to calcitic. Why such a large range?
- In general, Mehlich 3 results between labs was quite similar. There was more variability with Mehlich 1 results.
- Steve provided additional data consisting of the median plus relative standard deviation. It would be desirable to include one or both of these statistical parameters in future exchanges.

Maryland (Joe Buriel) will run the exchange for next year and will again try to complete this in a timely manner.

● **N, P, K Recommendations - Steve Donohue, Virginia Tech**

Steve introduced this topic and reviewed the major points last year when we focused on the following:

- Maximum P or K recommendation at zero soil test level.
- Soil test level of no further crop response.
- Recommendation at the point of no further crop response.
- Soil test level where the recommendation is zero.

Steve reviewed our work over the past two years regarding development of standardized test levels and recommendations. The group then discussed fertilizer recommendations for the three major nutrients as follows:

### Nitrogen

The group completed work on nitrogen last year. Nitrogen recommendations were pretty consistent, with nine of 13 labs using approximately 1 lb. of nitrogen per bushel of expected yield for their basic nitrogen recommendation for corn. The group concluded that a suggested range for a nitrogen recommendation for a 125 bu/A corn crop would be 125-150 lb. N/A. This is based on using 1 to 1.2 lbs. of nitrogen per bushel of expected yield.

As was noted the previous year, there was considerable variation in legume credits between labs (table enclosed). It was noted that there are many factors that influence this. Again, no conclusion was reached on this. However, since certified crop advisor exams ask questions regarding nitrogen contributions from the previous crop, it was decided to see if we could develop standard credits at a future date.

### Phosphorus

Phosphorus soil test levels and fertilizer recommendations made by the various labs were again reviewed, and proposed standardized soil test levels were discussed (P table enclosed). With no disagreement, the standard soil test levels and recommendations were adopted by the group for corn grain with a yield potential of 125 bu/A.

### Potassium

Potassium soil test levels and fertilizer recommendations made by the various labs were again reviewed, and proposed standardized soil test levels were discussed (K table enclosed). With no disagreement, the standard soil test levels and recommendations were adopted by the group for corn grain with a yield potential of 125 bu/A.

## ● **Precision Farming - Steve Donohue, Virginia Tech**

### Virginia Tech - Steve Donohue

- Discussed some general pluses and minuses regarding precision farming.
- Shared data on soil nutrient variability in Virginia's Piedmont soils.
- State conference on precision farming was held in Williamsburg, Virginia, in December, 1996. Steve is planning on conducting several workshops across the state in fall, 1997.

### Southern States - Steve Patterson

- Presented information on involvement of Southern States with precision farming, and its future potential.

#### Delaware - Karen Gartley

- Precision farming is mainly in area of commercial vegetable production. Primarily large vegetable producers. Equipment not for smaller fields.
- Commercial vegetable specialist providing main effort in this area.

#### North Carolina - Ray Tucker, Gordon Miner

- Can small fertilizer dealers justify the cost?
- Need to train students for precision ag jobs.
- The place to start is with yield monitors, not grid soil sampling.
- A lot of problem areas are being identified by using yield monitors, which is desirable.
- New fertilizer equipment spreads fertilizer much more uniformly than anything we've had in the past.

#### South Carolina - Rao Mylavarapu, Kathy Moore

- Reported that large fields in Missouri (80 acres) returned a profit of \$12.50 per acre after switching to precision agriculture.
- Have web site for precision agriculture-sampling.
- Bob Lippert (Agronomy) and Fran Wolak (Ag & Bioengineering) are working in area of precision farming. Have not found correlation between soil nutrients and yield; subsoil nutrients may influence this. Other soil characteristics such as texture and depth to clay are being investigated.

#### A&L - Paul Chu

- Lab provides support in area of nutrient management and precision farming to interested clientele.

#### Brookside - Mark Flock

- Precision ag is good for scouting and spot treatment. Yield monitors are good.
- Yield vs. soil nutrient level give mixed results.

#### Agri-Analysis - Tim Hoerner

- Precision farming/grid sampling is another tool for solving agronomic problems.

- Yield mapping will provide impetus to look for new problems in fields.
- Can save money on seed with variable rate seeding.

- **State/Lab Reports**

Agri-Analysis - Tim Hoerner

- Looking for quicker method of organic matter determination. Currently using Walkley-Black. Considering NIR.

Brookside - Mark Flock

- Involved with USGA testing.
- Has accreditation from AALA (American Association of Laboratories Accreditation). Need to document everything.
- Identified problem with ASTM sieve.
- Found that sub-angular sand was superior to round sand (particle shape) in preparation of golf greens.

U.S. Borax - Jim Woodruff

- Reported no difference between boric acid and sodium borate (distributed reprint of Communications article by Guertal, etc.).

A&L - Paul Chu

- Reported on their certification for manure and sludge testing.

Maryland - Joe Buriel

- Going to a soil test index system in March, 1998.
- Distributed handouts on new index and intraconverting lab test results between labs.
- Last year analyzed: 900 manure samples; 15,000 soil samples; 6,000 CNH samples; 600 research samples.

South Carolina - Kathy Moore

- Ag Service Lab has a new home page: <http://agweb.clemson.edu/agnews/agsrvlb.htm>
- Total samples for 1996 were as follows: soil - 35,600; feed & forage - 2,063; plant tissue analyses - 2,639; irrigation water - 291; animal waste - 344.

- For Clemson Service Lab prices, see web page.
- Implemented new computer program for printing soil analysis reports. Took considerable time.
- Are disseminating soil test reports either via e-mail or regular mail service. Bob Lippert's home page explains various soil analyses.
- Soil Science department at Clemson has new name: Faculty of Soil and Land Resources.
- Rao conducting validation experiments in three counties for phosphorus and potassium to check current fertilizer recommendations. Also looking at metal loading and runoff, and involved with CCA training programs.

#### North Carolina - Ray Campbell, Ray Tucker

- Last year, analyzed 10,000 plant samples; 4,000 water samples; and 4,000 waste samples.
- Are providing reports on Internet.
- Computerizing lab was big project for past year.
- Certification of waste applicators is currently a major effort in North Carolina.
- Distributed new "Crop Fertilization Based on North Carolina Soil Test." Format has been changed.
- Involved with GPS with Southern States.
- Currently analyzing maximum of 2,100 soil samples per day. Push to increase this number even higher.
- North Carolina lab's home page: <http://www.agr.state.nc.us/agronomi>

#### Delaware - Karen Gartley

- Has finished Nutrient Management Handbook. Completing work on a slide set to go along with it.
- Currently going through a lab merger to create a college analytical support lab. This will be a major effort during the next 6-12 months. Began offering a lead test; charging \$10 per sample.

#### Virginia - Steve Heckendorn

- Samples up ~10% from a year ago.

- Price of routine soil test increased from \$6 to \$7 per sample. Hired another lab technician after losing 2.25 people the year before.
  - Beginning July 1, 1996, lab began offering faxing service for return of soil test reports.
  - Revised several forms and Soil Test Notes.
  - Have new 4 sample self-mailer made by Bassett Printing Corp, Bassett, VA (Tim Rhyne 800/336-5102). Also distributed examples of Virginia Tech's soil sample boxes. The manufacturer is Laird (Etta) Packaging, Inc., Marion, NC, 704/652-5511.
  - New ICP on order - Spectro-ICP, Model FTM-08 with two optical benches: an UV monochromator (160-480 nm) and a 13 channel polychromator (~260-800 nm) which can both be used at the same time.
- **Ray Tucker was unanimously elected chairman and will serve during the 1998-99 (2-year time period).**
  - **1998 meeting - February 18-19, 1998 in Richmond, Virginia.**

Submitted by: Stephen J. Donohue, Virginia Tech

## N RECOMMENDATIONS - CORN (125 bu/A)

Lab	lb N/A	lb N/bu
A&L	125	1.0
Brookside	130	1.0
Del	125	1.0
Ga	150	1.2
Md	125	1.0
NJ	125	1.0
NC	120-160	1.0-1.25
PA	130	1.0
Spectrum	175	1.4
SC	120	1.0
VA	135	1.0 <i>L.I</i>
WVa	150	1.2
Agri-Analysis	130	1.0
Average	137	1.1
Std	125-150	1.0-1.2

## N CREDITS - PREVIOUS CROP

Lab	Alfalfa	Red Clover	Soybeans
		lb/A	
A&L	30-40	20	0-20
Brookside	75-80		1/2 lb/bu
Del	90	60	1/2 lb/bu
Ga	80-100	80-100	20-40
Md	50-100	40	15-40
NJ	50-100	40	15
NC	80-100	60-75	20-30
PA	40-110	40-80	1 lb/bu
Spectrum	50	30	10
SC	20-30	20-30	20-30
VA	90	80	1/2 lb/bu
WVa	40		
Average			





## P RECOMMENDATIONS - CORN

Test	Lab	Max P2O5 Recom	ST P 100% Yld	P2O5 Recom 100% Yld	ST P 0 Recom
		lb/A	mg/dm3	lb/A	mg/dm3
	Del	140	37.5	20	45
	Md	155	25	35	51
M1	Va	120	22	40	69
	WVa	140		40	112
	SC	100	26-38	0	26-38
Std		150	20	40/0	35
	A&L	100	37.5	30	75
	Bksd	150	40	40	56
P1,M3	Spct	120	35	40	65
	NJ	120	31	40	56
	NC	150	30		
	PA	190	38	50	52
Std		150	30	40/0	50

## P RECOMMENDATIONS - CORN

Test	Lab	Max P2O5 Recom	ST P 100% Yld	P2O5 Recom 100% Yld	ST P 0 Recom
		lb/A	mg/dm <sup>3</sup>	lb/A	mg/dm <sup>3</sup>
M1-Std		150*	20**	40/0+	35++
M3 Std		150*	30***	40/0+	50++

\* For sandy soils, 100 lb/A may be used.

\*\* For high clay soils, critical level = 15 mg/dm<sup>3</sup>.

\*\*\*For high clay soils, critical level = 20 mg/dm<sup>3</sup>.

+ If soil tested annually, recommendation = 0. Else, 40 lb/A.

++ 1.5 X critical level.

## K RECOMMENDATIONS - CORN

Test	Lab	Max K2O Recom	ST K 100% Yld	K2O Recom 100% Yld	ST K 0 Recom
		lb/A	mg/dm <sup>3</sup>	lb/A	mg/dm <sup>3</sup>
	Del	110	78	25	94
	Md	150	75	40	151
M1	Va	120	110	40	194
	WVa	140		40	308
	SC	100	98	0	98
Std		150	80	40/0	120
	A&L	150	110	40	180
	Bksd	175	130	40	150
P1,M3	Spct	180	115	60	215
	NJ	120		40	168
	NC	150	100	40	150
	PA	240	100	40	120
Std		150	110	40/0	165