

CREDIBILITY OF SOIL TESTING:
RESULTS OF THE IOWA TASK FORCE

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History

Several factors led to the convening of the Iowa Soil Testing Task Force: (1) The Iowa legislature passed the 1987 Groundwater Protection Act; (2) The Big Spring study in northeast Iowa in a Karst topography region revealed presence of pesticides and nitrates in groundwater; (3) Public awareness of contaminants in public water supplies was enhanced by influential newspapers and other publications; (4) Influential publications did major stories on the results of soil test comparison studies of several state universities, suggesting that Iowa farmers were applying excessive rates of fertilizers, leading to environmental contamination.

These developments led to the Midwest Soil Testing Conference being held in Des Moines in September, 1987. This conference was called by Iowa Attorney General Tom Miller and Secretary of Agriculture Dale Cochran. Both stated their belief that Iowa farmers were applying excessive rates of fertilizer, leading to poor economics and environmental pollution. And it was strongly implied that some private soil testing laboratories were the major culprit, by making excessive fertilizer recommendations from soil tests.

The conference consisted of about 250 attendees and speakers from universities, testing labs, dealers, fertilizer and pesticide manufacturers and distributors, consultants, and other agriculturally interested parties. There were various facts and opinions presented, both pro and con, but few, if any, beliefs were changed. The question of excessive fertilizer recommendations remained, leading Mr. Miller and Mr. Cochran to appoint a task force to deal with the issue.

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The Task Force

Attorney General Miller and Secretary Cochran appointed a 10-member Soil Testing Task Force with representatives from private soil testing labs, Iowa State University, fertilizer manufacturers, dealers, and farmers. The group was charged with reviewing the problems in soil testing of excessive variation in analytical results, reporting procedures and terminology, interpretations, and fertilizer recommendations. Specific recommendations were to be made, to help correct these problems and improve credibility of soil testing.

Members of the task force were: Brent Neuberger, Minnesota Valley Testing Lab, Nevada, IA; Ken Pohlman, A & L Labs, Omaha, NE; Dr. Regis Voss, Iowa State University, Ames, IA; Dr. Randy Killorn, Iowa State University, Ames, IA; Dr. Gary Colliver, Farmland Industries, inc., Kansas City, MO; Scott Tinsman, Twin States Engineering and Chemical Co., Davenport, IA; Dan Frieburg, The Yield Co., Fairfield, IA; Kim Spangler, West Central Co-op, Jefferson, IA; Tim Fevold, Hertz Farm Management, Nevada, IA; Don Seltz, Farmer, Fort Dodge, IA.

The group met, along with various staff from the Miller and Cochran offices, five times during January-April, 1988, plus held telephone conference calls and numerous correspondence. A final report of recommended actions and guidelines was submitted to the Attorney General and the Secretary, and they released the results to the public via a press release and press conference on April 8, 1988.

Recommendations and Guidelines

The Task Force made recommendations in five major areas summarized as follows:

1. Laboratory Analysis

A voluntary certification program for soil testing labs servicing Iowa, administered by the Department of Agriculture and Land Stewardship. Included are a yearly membership fee, yearly lab inspection by the Department, a quarterly check sample exchange/monitoring program for quality control, use of standard testing methods as defined in NCR Publication No. 221, and use of standard units of reporting (all nutrients as ppm). Also there are provisions for an impartial panel of agronomists to be designated by the Secretary of Agriculture for the purpose of reviewing new or different laboratory procedures. The three agronomists would consist of:

one from ISU, one from a neighboring land grant university, and one from the fertilizer or crop consulting industry who has been ARCPACS certified. Last, the Secretary of Agriculture would publish an "approved list" of those labs meeting the certification standards.

2. Laboratory Recommendations

Phosphorus (P) and Potassium (K) were treated separately, on the premise they were relatively immobile soil nutrients, not likely to contribute to groundwater contamination, but that affected farmer economics. It was recommended P and K tests levels be uniformly categorized according to ISU standards as follows:

<u>Soil Test Classification</u>		<u>Soil Test Ranges in PPM</u>	
		<u>P</u>	<u>K</u>
Very Low	(VL)	7 or less	44 or less
Low	(L)	8 - 15	45 - 84
Medium	(M)	16 - 20	85 - 125
High	(H)	21 - 30	126 - 188
Very High	(VH)	31 or more	189 or more

(soil test levels based on a dry sample)

To accommodate differences in soil management approaches and fertilizer recommendations, "crop removal" levels of P and K as defined by ISU are to be identified as the index basis for fertilizer recommendations. "Crop removal" is the quantity of nutrients in the harvested portion of the crop. Recommendations, then, are to be identified relative to "crop removal", recognizing that lower testing soils may require higher quantities of nutrients, and that higher testing soils may require only "crop removal" or lesser amounts.

Fertilizer recommendations are to be based on scientifically valid research, recognizing that land-grant universities have been the principle source of such information. Any lab wishing to use other basis for recommendations must furnish data to support it and have it reviewed by the above mentioned impartial panel of agronomists appointed by the Secretary.

Secondary and Micronutrient tests used must be according to NCR Publication 221 procedures. To recommend any of these nutrients, the lab must furnish substantiated data on the benefits, and it must be reviewed by the impartial panel of agronomists.

3. Nitrogen - Groundwater

The Task Force chose not to attempt a comprehensive treatment of nitrogen, believing it was beyond the scope of their assignment. However, some guidelines for nitrogen fertilizer recommendations were presented as follows:

- a. Set reasonable and realistic yield goals, paying close attention to adjustments for nitrogen from manure, previous legume crop, and N in P fertilizers.
- b. Avoid intentional over-application to offset anticipated losses. Over-applications increase the probability of nitrate leaching.
- c. On sandy soils (low clay), those with the greatest potential for N leaching, manage N application through split applications.

The Task Force encourages the further development of a reliable N soil test, and recommends its adoption when it becomes available.

4. Pesticides - Groundwater

The Task Force believes soil testing can be a useful tool in managing pesticide usage, and recommends it be used to select proper rates of soil-applied chemicals which are sensitive to organic matter, soil texture, and pH. It should be used to identify soils which have the greatest potential for chemical leaching, and that information passed along to users.

5. Education and Implementation

The Task Force recommended the Secretary of Agriculture and the Attorney General implement the recommendations by the spring of 1989. Further, that there should be an educational program emphasizing training dealers and farmers on the new certification program and its implications. The ISU Extension Service should conduct the principal educational efforts.

Conclusions

Implementation is currently in progress and the Secretary of Agriculture expects to have the certification program in place by the spring of 1989. It is the author's observation and opinion that some labs are already making some adjustments, and that the net effect will be positive for all agricultural interests.

PROCEEDINGS OF THE EIGHTEENTH
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Program Chairman:

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CREDITS

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