AN OVERVIEW OF NEW SERVICES AT THE SOIL AND PLANT ANALYSIS LAB- MADISON

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The new Soil and Plant Analysis Lab under-construction at the UW West Madison Agricultural Research Station is well on its way to completion. The new laboratory at 8452 Mineral Point Road (west of Junction Road and County M, near Menards) will be ready for occupancy by mid-February, 2004.

The new facility will be able to efficiently accommodate all current testing services and provide room for implementing new services. The Madison laboratory will now be able to focus on continued growth in specialty/customized analysis for private business, UW System researchers and other educational researchers while maintaining a continued noticeable presence in agricultural diagnostic services. Certifications necessary for clients to meet state and federal agency project requirements can now be obtained. Find out about all the service options in the Madison Lab newsletter, 'The Spectrum' currently published 4-6 times per year and available on request via http://uwlab.soils.wisc.edu/.

Clients using the Madison Lab range from farmers and their advisors, homeowners and private business to specialized UW System and other researchers. Agricultural and homeowner clients benefit from using UW Lab services because services are based on recent research findings impacting crop production and environmental quality. Businesses benefit from the close association of UW Lab staff with state-of-the-art knowledge and instrumentation, ability to access library services and broad experience in sample types/methods that allow results to be delivered with confidence. And the UW System researchers benefit from having a wide range of high quality services available without having to maintain in-house staff and/or instrumentation.

New Service

The Madison Lab is in a unique position to deliver analytical services of high quality and relevance to a wide variety of clients because of its state-of-the-art facility and highly experienced staff. The Madison Lab was initially established in 1913 by legislative mandate to provide soil testing and education to Wisconsin farmers and currently offers a wide variety of research-based diagnostic services. While agricultural diagnostic testing remains a core function, the Madison Lab can now provide new and customized services that complement client needs. New services will include organic compound and pesticide residue analysis, water retention and other soil physical characteristics and customized sample analysis. These services will be available as soon as possible after relocation is completed.

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1. Organic Compound and Pesticide Residue Analysis

Organic acids common in silage such as acetic, propionic, isobutyric, butyric, isovaleric, valeric, isocaproic, caproic and lactic can be determined from aqueous extractions. Residues from organo-chlorine, phosphate and carbamate pesticides can also be determined by using a new 'shared' accelerated solvent extraction system and gas chromatograph housed in the Soils Annex, Dept of Soil Science, UW-Madison. Organic compounds other than those previously listed can be requested for consideration.

2. Water Retention and Related Soil Physical Characteristics

Wet range water retention determinations for soils will be determined from cores taken with a specially designed 'sampling kit' given to clients. Bulk density and saturated hydraulic conductivity can then be determined from the core and porosity calculated. About 2 weeks will be required per sample for complete characterization.

3. Customized Sample Analysis

The Madison Lab can now provide more 'customized' sample analytical methods ranging from modifying sample preparation in the lab to staff developing protocols for clients to use at their own facility. These project-based consulting services help clients produce results quickly and overcome possible staffing, equipment and/or expertise limitations. UW Lab professionals can provide needed expertise to minimize clients' time invested in method development and sample analysis because of their extensive experience with a variety of sample types and laboratory instrumentation.

Madison Lab staff will meet with clients to discuss analytical requirements and form a contract agreement. The initial consultation includes discussion/information for current laboratory services, selected instrument detection limits and working calibration ranges, instrument/method performance based on NIST and other reference materials and pre/post sampling guidelines. Madison Lab staff will also discuss specific client analysis needs and provide an estimate of services needed in addition to those available within the Lab. Staff will follow-up with an estimate of project cost ranging from established per sample fees to an hourly labor charge and/or custom sample fee. Access http://uwlab.soils.edu/ for more details about customized sample analysis, project-based consulting and routine services.

Two highly experienced Instrumentation Specialists are available from the Madison Lab to consult on your analytical needs. Drs. Ibrahim Saeed and Ling Zhang have extensive training and experience in method development and laboratory instrumentation. Some of the laboratory instrumentation and analytical techniques they can provide include:

ICP-MS, ICP-OES, HR-ICP-MS spectroscopy, stable isotope ratio determination, hydride sample preparation, HPLC fluorescence, GC-MS, ion chromatography, flow injection analysis, accelerated solvent extraction, flame-AAS, GF-AAS, cold vapor-AAS, UV/visible, FT-IR, carbon analyzer, XRF, XRD, SEM, and microwave digestion systems. They have successfully analyzed the elemental content of 'difficult' samples such as pure alloy/low alloy steel by using alternative preparation techniques. Other 'difficult' samples have required them to use micro sample preparation and low volume solution introduction

techniques. Stable isotope ratio determinations of Pb, Sr and Fe including fundamental mathematics of dilution, blank and isobaric interferences have been successfully completed on a variety of sample types.

Summary

The ‘new’ Soil and Plant Analysis Lab and highly experienced staff are ready to meet your analytical needs. Contact Sherry Combs, Director (smcombs@wisc.edu or 225-6552) for more information.