Agriculture Laboratory Proficiency (ALP) Program
Individual Performance Analysis Report

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in cooperation with Robert O. Miller, PhD, Program Technical Director

The Agriculture Laboratory Proficiency (ALP) Program Spring 2010 Round cycle 11 was completed May 18, 2010, with results provided by fifty-seven labs from the United States, Canada, Greece and South Africa. Proficiency samples consisted of five soils, three botanical and three water samples. Analytical methods evaluated are base on those published by AOAC, four regional soil work groups, the Soil Plant Analysis Council and Forestry Canada.

Standard Reference Soils (SRS), materials used for the soils and environmental programs were: SRS-1001 a silt loam from near Owens borough, KY; SRS-1002 series a loam collected near Twin Falls, ID; SRS-1003 series Platte loam collected from a vine-yard near Sebastpol, CA; SRS-1004 a silty clay loam collected DeKalb, IL; and SRS-1005 series sandy loam collected near Brookings, SD.
Standard Reference Botanical (SRB) materials were: corn stalk from Iowa, orchard grass from Michigan and grass hay mixture. Standard Reference Water (SRW) solutions represent agriculture water samples collected from: Windsor, CO; Kettleman City, CA and Cheyenne, WY.
This Individual Performance Analysis report presents results that are particular to your laboratory. All properties and samples for which your laboratory reported results are presented in this report. An analysis between and within laboratory performance for soild, botanicals, water and environmental properties will follow this page. A summary of results follows immediately after the analysis for each sample type. This summary condenses your between laboratory performance on a single page; this summary may be a the best place to start the review of your results. In the future, this report will also present historical results to provide a more complete understanding of laboratory performance.

It is important to remember that all ALP Program evaluations are based on comparative and consensus statistics; users must be aware that small group statistics are inherently less robust than large group statistics, even though robust evaluations have been preferentially chosen. No comparative results are provided for analyses with fewer than 4 reported results. Results of all laboratories that reported for each property may be found in the web-based summary report posted on the CTS Web site.

Quick Key to your Performance Analysis Report

Lab Mean	The mean of the triplicate determinations submitted for each sample-property.
Grand Median	The median of all included Lab Means submitted for each sample-property.
MAD	The median of the differences (absolute values) between the Grand Median and the Lab Means.
95% Conf Interval	The estimated range of value which is likely to include the sample-property value, calculated from the Grand Median and the M.A.D.
WithinLab Performance, k	The ratio (standard or z-score) of each laboratory standard deviation within each sample-property and the WithinLab Avg STD (see below). A score of 1 indicates that variation within a laboratory for that sample-property was the same as the average variation.
WithinLab Avg STD	The average (sum of squares) of the standard deviations of the triplicate determinations submitted for each sample-property.
Laboratory-Sample Bias (from summary page)	The ratio (standard or z-score) of each laboratory difference, between the Lab Mean and the Grand Median, and the M.A.D. A score of 0 indicates agreement of the laboratory with the consensus average.

Analysis # 801: Soil Properties

Test Code	Analysis	Units	Samples	Lab Mean	Grand Median	MAD	95% Conf Interval	WithinLab Performance, k	WithinLab Avg STD	Labs Rpt
101	Saturated Paste Moisture		SRS1001	44.0 X	38.0	2.03	32.1 - 43.9	0.54	1.1	18
		Percent	SRS1002	35.1	29.6	2.11	23.5 - 35.7	0.90	1.3	18
			SRS1003	45.8 X	37.9	2.23	31.4 - 44.3	1.53	1.2	18
			SRS1004	54.0	47.9	3.46	37.9 - 58.0	0.93	1.2	18
			SRS1005	50.1 X	39.9	2.45	32.8 - 47.0	0.28	1.5	18
103	ECe - sp		SRS1001	0.98	1.37	0.14	0.96 - 1.77	0.75	0.07	19
		dS/m	SRS1002	1.15	1.07	0.10	0.78 - 1.36	3.23 X	0.05	19
			SRS1003	0.44	0.41	0.030	0.32 - 0.49	2.66 X	0.03	19
			SRS1004	0.37	0.42	0.049	0.27 - 0.56	0.28	0.06	19
			SRS1005	0.42	0.68	0.13	0.30 - 1.07	0.16	0.04	19
126	NO3-N Cd. Rd.		SRS1001	54.4	54.8	2.96	46.2 - 63.4	0.34	2.2	32
		mg/kg	SRS1002	2.83	1.05	0.70	0.00 - 3.08	1.05	0.24	28
			SRS1003	4.20	4.56	0.55	2.96 - 6.16	0.51	0.34	32
			SRS1004	9.37	10.3	0.75	8.2 - 12.5	0.43	0.49	32
			SRS1005	21.3	22.4	1.22	18.8 - 25.9	0.05	1.3	32
134	PO4-P Olsen/Bicarb (1:20)		SRS1001	15.0	16.2	2.16	9.9 - 22.4	0.23	1.0	28
		mg/kg	SRS1002	17.5	19.2	2.64	11.5 - 26.8	1.18	1.0	28
			SRS1003	6.10	6.90	1.27	3.23 - 10.57	0.36	0.73	28
			SRS1004	39.7	41.3	3.93	29.9 - 52.7	0.59	2.0	28
			SRS1005	4.10	4.82	1.06	1.75 - 7.90	0.27	0.64	28
140	K Ammonium Acetate		SRS1001	137.7	138.0	10.00	109.0 - 167.0	0.93	8.1	31
		mg/kg	SRS1002	118.7	129.4	13.2	91.1 - 167.6	1.44	8.4	31
			SRS1003	250.3	240.3	11.9	205.8 - 274.8	1.06	7.6	31
			SRS1004	247.3	232.7	18.7	178.5 - 286.8	1.96	7.2	31
			SRS1005	190.3	161.8	12.2	126.3 - 197.2	1.82	8.7	31
141	Ca Ammonium Acetate		SRS1001	1,313.3	1,286.1	111.2	963.7 - 1,608.5	1.04	69.7	28
		mg/kg	SRS1002	3,496.7	3,564.0	754.2	1,376.9 - 5,751.1	0.73	200.8	28
			SRS1003	1,030.0	1,174.3	135.5	781.4 - 1,567.3	1.42	43.9	28
			SRS1004	2,783.3	2,866.0	201.0	2,283.1 - 3,448.9	2.18	105.1	28
			SRS1005	2,986.7	2,623.0	201.2	2,039.6 - 3,206.4	0.18	112.6	28
142	Mg Ammonium Acetate		SRS1001	266.7 X	187.3	9.67	159.3 - 215.4	2.48 X	9.7	28
		mg/kg	SRS1002	955.0	1,051.7	112.3	725.9 - 1,377.4	1.46	64.0	28
			SRS1003	434.0	449.3	35.9	345.3 - 553.4	0.54	27.4	28
			SRS1004	807.7	832.8	59.5	660.3 - 1,005.4	1.90	40.8	28
			SRS1005	369.3	355.5	22.3	290.7 - 420.3	1.56	17.1	28
143	Na Ammonium Acetate		SRS1001	41.3 X	18.5	4.66	5.0 - 32.1	1.03	2.5	22
		mg/kg	SRS1002	193.7	165.6	27.2	86.7 - 244.5	0.62	6.5	22
			SRS1003	57.3 X	31.0	3.97	19.5 - 42.6	2.27 X	3.4	22
			SRS1004	29.7 X	16.3	2.91	7.9 - 24.8	2.36 X	2.9	22
			SRS1005	44.0 X	10.8	2.97	2.2 - 19.4	3.58 X	3.6	22
145	K- Bicarb.		SRS1001	146.3	134.7	n/a	n/a	1.70 X	2.8	3
		mg/kg	SRS1002	84.7	79.3	n/a	n/a	0.38	1.5	3
			SRS1003	237.3	207.3	n/a	n/a	0.42	3.6	3
			SRS1004	212.3	187.0	n/a	n/a	0.82	2.5	3
			SRS1005	173.0	120.3	n/a	n/a	0.80	3.3	3
169	Zn - DTPA		SRS1001	0.81	0.60	0.09	0.34 - 0.86	0.30	0.13	27
		mg/kg	SRS1002	2.96	2.88	0.44	1.62 - 4.15	0.37	0.22	27
			SRS1003	1.22	1.05	0.09	0.80 - 1.30	0.66	0.09	27
			SRS1004	2.21	2.08	0.16	1.63 - 2.54	0.63	0.11	27
			SRS1005	0.71	0.50	0.10	0.21 - 0.79	0.36	0.06	27

Analysis # 801: Soil Properties

Test Code	Analysis	Units	Samples	Lab Mean	Grand Median	MAD	95% Conf Interval	WithinLab Performance, k	WithinLab Avg STD	Labs Rpt
170	Mn - DTPA		SRS1001	24.1	13.3	4.82	0.0 - 27.3	0.37	2.1	25
		mg/kg	SRS1002	1.66	1.48	0.35	0.46 - 2.50	0.30	0.22	25
			SRS1003	23.3	19.6	1.61	14.9 - 24.2	0.24	1.1	25
			SRS1004	15.5	11.7	2.86	3.4 - 20.0	0.45	1.0	25
			SRS1005	16.0	6.83	4.63	0.00 - 20.27	0.04	1.2	25
171	Fe - DTPA		SRS1001	74.5	78.8	19.0	23.9 - 133.8	1.37	6.6	25
		mg/kg	SRS1002	4.27	3.37	1.03	0.37 - 6.36	0.21	1.11	25
			SRS1003	30.7	33.1	7.10	12.5 - 53.7	1.31	2.0	25
			SRS1004	28.1	33.6	5.57	17.4 - 49.7	0.87	1.7	25
			SRS1005	20.9	16.4	2.95	7.8 - 24.9	1.01	1.0	25
172	Cu - DTPA		SRS1001	1.28	1.13	0.19	0.59 - 1.67	0.07	0.61	25
		mg/kg	SRS1002	0.31	0.31	0.037	0.20 - 0.42	0.11	0.30	25
			SRS1003	0.47	0.52	0.08	0.28 - 0.77	0.17	0.24	25
			SRS1004	0.87	0.87	0.09	0.62 - 1.12	0.24	0.19	25
			SRS1005	0.78	0.59	0.12	0.23 - 0.95	0.25	0.14	25

Laboratory Performance Summary - Soil Properties

Test Code	Analysis	Performance Review of Laboratory-Sample Biases (numbers closer to zero indicate agreement with other laboratories)				
		SRS1001	SRS1002	SRS1003	SRS1004	SRS1005
101	Saturated Paste Moisture	2.94	2.62	3.57	1.77	4.14
103	ECe - sp	-2.73	0.80	1.00	-1.00	-1.99
126	NO3-N Cd. Rd.	-0.13	2.55	-0.66	-1.28	-0.84
134	PO4-P Olsen/Bicarb (1:20)	-0.52	-0.65	-0.63	-0.40	-0.68
140	K Ammonium Acetate	-0.03	-0.81	0.84	0.79	2.34
141	Ca Ammonium Acetate	0.24	-0.09	-1.07	-0.41	1.81
142	Mg Ammonium Acetate	8.21	-0.86	-0.43	-0.42	0.62
143	Na Ammonium Acetate	4.89	1.03	6.62	4.58	11.21
169	Zn - DTPA	2.37	0.18	1.92	0.80	2.13
170	Mn - DTPA	2.24	0.50	2.32	1.31	1.97
171	Fe - DTPA	-0.23	0.87	-0.35	-0.98	1.53
172	Cu - DTPA	0.79	-0.09	-0.64	0.00	1.54