Australasian Soil and Plant Analysis Council Inc.

ASPAC Plant Proficiency Testing Program Report

2008-09

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Foreword

This annual report is the fifth in the upgraded inter-laboratory proficiency program (ILPP) for plant chemical tests, the first being the 2004-2005 report. It covers three “rounds” each of four specially prepared samples sent to as many as 39 participants in October 2008, in February 2009 and in April 2009. A similar annual program for soils (reported separately) operated over the same time period.

Members of ASPAC’s Laboratory Proficiency Committee, the membership of which is listed on page iv of this report, oversaw the program. The ASPAC Executive is grateful to all of those who contributed to the report, inclusive of staff of Proficiency Services Limited (now called Global Proficiency Ltd), our service provider in New Zealand.

The ASPAC Executive also appreciates the effort and commitment made by participating laboratories. By participating they share a commitment to and responsibility for measurement quality.

Ms Teresa Fowles
ASPAC Chairperson

Acknowledgements

LandCare Research (New Zealand) is thanked for the sample homogeneity testing they undertook for who are now Global Proficiency Ltd (GPL). Operational staff of GPL are thanked for their inputs.

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Your Notes

1. Introduction

The Australasian Soil and Plant Analysis Council Inc (ASPAC) commenced its not-for-profit ILPPs and issued its first soil program report in 1993. Its ILPPs specifically target soil and plant chemical laboratories in the Australasian region, although there are no restrictions on who can participate. A service provider operates the programs for ASPAC under contract.

ILPPs support ASPAC's overall goals to:

- promote excellence in all aspects of soil and plant analysis
- encourage and promote the adoption of preferred methods and protocols used in soil and plant analysis within Australasia.

More details on ASPAC can be obtained from its public web site at www.aspac-australasia.com. The site includes ASPAC's Strategic Plan and the names of its elected and appointed office holders.

Published ASPAC plant ILPP reports are dated 1994, 1996, 1998, 1999, 2000, 2001, 2002, 2004-05, 2005-06, 2006-07 and 2007-08. All to and including 2002 were conducted and reported through an Australian provider as discrete entities, based on six homogeneous samples of dried and ground plant materials and subsequent laboratory analysis for a comprehensive range of plant chemical tests, mostly for total elements.

This is the fifth annual report from ASPAC's new, upgraded plant ILPP that commenced in 2004 and now operates out of New Zealand through what is now Global Proficiency Limited, previously Proficiency Services Limited (PSL). The program is a composite of three "rounds", each of four homogeneous samples of dried and ground plant materials. Laboratory participants (Appendix 1) receive individual electronic progress reports of their results (relative to other participating laboratories) for all tests performed in each of these "rounds". They also receive from the service provider a consolidated, individual annual summary report on their measurement performance relative to others.

This annual program report consolidates (for ASPAC members and the public record) the three "rounds" that occurred in October 2008, in February 2009 and in April 2009. It also records program methodology, summary statistics, and a listing of "raw" data by test and laboratory for the three "rounds". In addition, the report includes an outline of how ASPAC periodically confers performance-based, method-specific certification to laboratories that regularly participate. To respect confidentiality, the cross-reference between laboratory name and laboratory identification number is not included. However, ASPAC's public web site lists the laboratories certified as proficient for specific tests for the most recently completed program year. ASPAC is committed to update information on certified tests and certifications for participating laboratories soon after completion of each annual program for both plants and soils.

2. Program Details

2.1 Responsibilities

PSL was contracted by ASPAC as the plant ILPP provider for 2008-09. Accordingly, PSL had responsibility on a "round-by round" basis for sourcing and preparing samples and for the timely supply of samples to participating laboratories. They also undertook data collation and statistical analysis and "round-by-round" reporting for ASPAC and assembled the summary and "raw" data provided in Section 3 and Appendix 4, respectively. PSL is a proficiency service provider accredited to *ISO Guide 43-1 Part 1: "Development and operation of proficiency testing schemes*".

Members of ASPAC's LPC had responsibility to implement and resolve matters of policy and to provide guidance on technical matters specific to soil and plant chemical testing both to PSL and to laboratory participants. The LPC also undertook statistical checks and audits for quality control purposes, participated in a Technical Advisory Group operated by PSL, and contributed to training workshops. ASPAC, through members of its LPC or via its state representatives, may contact managers of laboratories with poor analytical performance to ensure a measurement improvement program is commenced. Laboratories are encouraged to seek help from ASPAC if they are shown to be operating at levels of measurement performance below their peers.

Participants receive a unique, confidential laboratory number, subsequently used to identify the origin of each result presented in program reports and lists of results. Typically, this identification number carries forward from one annual program to the next, although there are exceptions.

2.2 Plant program participation

Thirty-nine laboratories arranged to participate in the ASPAC plant ILPP in 2008-09, but numbers of reported results varied by "round" and plant test. The most commonly reported tests with an average of 34 laboratories across the three "rounds" were calcium (Ca), magnesium (Mg), potassium (K) and sodium (Na), with phosphorus (P) and zinc (Zn) on 33, and iron (Fe), manganese (Mn) and nitrogen (N) on 32. The least frequently reported tests were silicon (Si), selenium (Se), lead (Pb), and cadmium (Cd), with averages of 6, 11, 11 and 13 laboratories, respectively. The counts for each test and sample are given in Table 1 and in Section 3.

Contact details for laboratories that submitted results for any test in one or more of the three rounds are provided in Appendix 1.

2.3 Tests and methods

Three proficiency "rounds" for plant materials – each comprising four samples of <0.5mm particle size – were offered for the 2008-09 program. Participants were invited to analyse each sample using methods normally employed in their laboratory. The number of tests was limited to 21 and are as listed in Table 1, noting that participants were not obliged or required to submit results for all tests. In order to permit a meaningful statistical analysis, a minimum of six participating laboratories was required for any one test.

Table 1. Plant tests (total elements), elemental symbols, units and the arithmetic average numbers of results per round submitted by participating laboratories in the ASPAC 2008-09 Plant ILPP

2008-09 Plant tests	Symbol	Units	Number of participants		
			Oct 08	Feb 09	Apr 09
Aluminium	Al	mg/kg	23	21	21
Boron	B	mg/kg	28	26	25
Cadmium	Cd	mg/kg	13	13	13
Calcium	Ca	%	35	34	32
Carbon	C	%	16	15	15
Chloride	Cl	%[A]	19	20	20
Cobalt	Co	mg/kg	18	20	18

2008-09 Plant tests	Symbol	Units	Number of participants		
			Oct 08	Feb 09	Apr 09
Copper	Cu	mg/kg	32	33	29
Iron	Fe	mg/kg	32	33	30
Lead	Pb	mg/kg	10	12	11
Magnesium	Mg	%	35	34	32
Manganese	Mn	mg/kg	33	34	31
Molybdenum	Mo	mg/kg	20	19	18
Nitrogen	N	%	33	32	32
Phosphorus	P	%	33	34	31
Potassium	K	%	34	35	32
Selenium	Se	mg/kg	11	11	11
Silicon	Si	%	7	6	6
Sodium	Na	%	34	35	32
Sulphur	S	%	27	25	25
Zinc	Zn	mg/kg	34	34	31

[A] Units of mg/kg are preferred for concentrations < 0.01%

All of the listed tests were understood to be true total concentrations in the plant material and reported on a 65°C oven dry basis, not on an "as received" basis. However it is possible that Al, Fe and Si results may only reflect total acid digestible concentrations and not recover refractory forms of these analytes.

2.4 Sample preparation and identification

Before distribution to participants, potential samples were assessed for homogeneity. Specifically, 10 containers of each sample were selected at random from the sub-sampled batch according to the principles described by Thompson and Wood (1993)[1]. These sub-samples were then tested in duplicate for plant total N, using Dumas combustion. The tests were conducted in an ISO 17025 accredited laboratory.

Results from the homogeneity testing were subsequently statistically assessed according to ISO REMCO Protocol N231 "*Harmonised Proficiency Testing Protocol*" of January 1992. Variations between samples were such that all sample batches were considered to meet homogeneity criteria suited to proficiency testing. Examples of the homogeneity data and statistical assessments are summarised in Appendix 2.

In addition to testing for homogeneity, the plant samples were irradiated or otherwise rendered biologically benign to comply with international and/or national biosecurity regulations or requirements[2].

[1] Thompson, M and Wood, R. (1993). International harmonized protocol for proficiency testing of (chemical) analytical laboratories. *Journal of AOAC International* ***76*** (4), 926 – 940.

[2] Rayment, G.E (2006). Australian efforts to prevent the accidental movement of pests and diseases in soil and plant samples. *Commun. Soil Sci. Plant Anal.,* **37**, 2107-2117.

Ultimately, the samples used in the three "rounds" of the 2008-09 program were distributed and coded as follows: October 2008 – ASP 101-104; February 2009 – ASP 21-24; and April 2009 – ASP 41-44. The association between sample code and sample type is provided in Table 2.

Table 2. Sample identification and the origin of the samples included in the ASPAC 2008-09 plant ILPP

Sample ID	*Sample Type*
ASP 101	Eucalyptus Leaves
ASP 102	Lucerne Chaff
ASP 103	Rice
ASP 104	Cabbage Leaves
ASP 21	Meadow Mix
ASP 22	Rose Leaves
ASP 23	Barley
ASP 24	Broccoli
ASP 41	Maize Meal
ASP 42	Peavine & Clover
ASP 43	Tea Leaves
ASP 44	Carrot

2.5 Data analysis and periodic reporting

Laboratory results, after submission to PSL, were entered into a database and independently checked for data transfer accuracy prior to data processing. The non-parametric assessment of laboratory performance for each sample and method was performed by an iterative statistical procedure similar to that used in WEPAL inter-laboratory proficiency programs of Wageningen University. This procedure[3,4] is suited to datasets of as few as six to eight laboratories, although larger laboratory populations are best. An outline of the "median / MAD" statistical procedure is provided in Appendix 3, with terms described in Table 3.

[3] Rayment, G.E., Miller, R.O. and Sulaeman, E. (2000). Proficiency testing and other interactive measures to enhance analytical quality in soil and plant laboratories. *Commun. Soil Sci. Plant Anal.* ***31***, 1513-1530.

[4] Whitehouse, M.W. (1987). Medians and MADs - Statistical methodology used at Wageningen, The Netherlands, for interlaboratory comparisons in the plant exchange program. Ag. Chem. Br. Report, ACU87/36. 10 pp. (Qld Dept. Primary Ind., Brisbane.)

Table 3. Statistical terms and their meanings in the context of this ASPAC annual report

Statistical term	*Meaning and/or derivation*
Count or number	Original population size.
Maximum i	The highest of a range of values, based on the initial data set.
Minimum i	The lowest of a range of values, based on the initial data set.
Median	The median is the score at the 50th percentile. It is the middle observation of a sequentially sorted array of numbers, except in the case of an even sample size. Here it is the arithmetic mean of the two observations in the middle of the sorted array of observations. The median of a reasonably sized array of numbers is insensitive to extreme scores.
Mean[A]	The arithmetic mean (or average) is the sum of the values of a variable divided by their number. It represents the point in a distribution of measurements about which the summed deviations equals zero. The arithmetic mean is sensitive to extreme measurements.
MAD	The Median of the Absolute Deviations, calculated as the median of the absolute values of the observations minus their median.
Interquartile range (IQR)	This is calculated by subtracting the score at the 25th percentile (referred to as the first quartile; Q_1) from the score at the 75th percentile (the third quartile; Q_3). This value is affected by the assumptions made in the calculation of the first and third quartiles, particularly for low population sizes. Moreover, these differences exist within and across statistical software packages. Prior to the 2004-05 rounds, ASPAC used the algorithm employed by EXCEL and some others. From the 2004-05 program, the algorithm employed has been that of SAS Method 4[5]. In summary, IQR = Q_3-Q_1.
Normalized IQR	This equates to IQR x 0.7413, where the latter is a normalizing factor.
Robust % CV[6]	The robust coefficient of variation (Robust % CV) = (100 x normalised IQR / median). For simplicity, the Robust %CV shown is for the initial results, and for "final" population of results for a test after the removal of "outliers" and perhaps "stragglers", usually following one or two iterations. Note that for Interim Reports, this term is estimated as = (100*MAD*1.483)/ Median, separately for "i" and "f" datasets.
Letter "i" and the letter "f" associated with medians, means, MADs, IQR and Robust %CVs.	The letter "i" relates to the initial data set. The letter "f" relates to the "final" data set, generated after one or two iterations typically after removal of laboratories with statistical "outliers" (if any), and statistical "stragglers" (if any).

A When the mean is greater than the median, the distribution is positively skewed. When the mean is lower than the median, the distribution is negatively skewed.

5 SAS Procedure Guide

6 "Guide to NATA Proficiency Testing". 27 pp. (National Association of Testing Authorities, Australia, December 1997).

In addition to medians and MADs, other statistical parameters (also described in Table 3) were calculated before and following the omission of non-conforming results. The "raw" data submitted by participating laboratories on a test-by-test basis are documented in Appendix 4, sometimes after rounding only for table formatting purposes.

Results submitted by each laboratory were expected to have three significant figures, unless protocol or common sense dictated otherwise. For example, the program accepted data where it was common to report measured concentrations to the nearest second decimal point, such as 0.01 mg/kg or 0.01 %, rather than to three significant figures. However, the program (like others internationally) did not accept as a numeric value a result reported as less than (<) or greater than (>) a specified number. In cases where the expected value was below the laboratory's lower limit of reporting, the expectation was that the laboratory would report a value half way between that value and zero. For high values, dilution was the expected option. In practice, this did not always occur in 2008-09, witnessed by the inclusion of a few zero values in the "raw" data compilations in Appendix 4.

Interim reports for each "round", summarizing measurement performance relative to the performance of all laboratories that undertook the same test/s, were routinely and quickly emailed to participants. The main purpose of these Interim Reports was to provide timely feedback and to enable laboratories to take prompt remedial action where appropriate. Interim reports also provided an opportunity to correct for any data-transfer and data-processing misinterpretations. In addition, a Newsletter from the service provider went to all participating laboratories. Its main purpose was to assist in the interpretation of interim reports. Also included in the Service Provider's Newsletter was information about upcoming events and operational administration of the program.

Laboratories that participated in the 2008-09 plant ILPP all received from PSL (on behalf of ASPAC) a laboratory specific, confidential, Annual Summary Report. Each laboratory's data for the 12 plant samples, the aggregate data from all participants, other relevant statistical data, and whether or not the test/s received ASPAC Certification (if applicable), were provided. The laboratory code number was included.

2.6 ASPAC's criteria for certification of laboratories for plant tests

Subject to satisfactory measurement performance typically for 12 samples across three sequential "rounds", across a twelve-month period, ASPAC awards participating laboratories with a printed, signed and dated *Certificate of Proficiency.* The *Certificate of Proficiency* identifies performance for each test that met criteria set by ASPAC. Certification applies when a laboratory incurs no more than <u>four</u> demerit points for the 12 samples.

Demerit points (if any) were allocated through the identification of "outliers" and "stragglers" by the "median / MAD" statistical procedure mentioned earlier in this report. Appendix 3 provides details on how outliers and stragglers were identified. Two demerit points were allocated to each statistical "outlier", while a statistical "straggler" was allocated one demerit point. As no sample result could be both an "outlier" and a "straggler", a maximum of two demerit points is all that could accrue per sample for a specific test.

For any single "round" of four samples, three (3) was set as the maximum number of demerit points for a specific test. This was done so that unsatisfactory measurement for a test in one "round" did not in itself result in failure to be certified for that test across the three "rounds" in the designated 12-month period.

If a “round” was missed, the maximum number of three demerit points for every test in that “round” was allocated, unless very special circumstances applied and was known or advised expeditiously to ASPAC’s LPC through its Convenor. When the explanation was accepted, performance from the three most recently completed “rounds” was used to assess eligibility for certification.

Finally, when less than six laboratories submitted results for a particular test and/or sample, proficiency assessments could not be made statistically with an acceptable level of confidence and hence certification for the specific tests could not be granted.

ASPAC’s *Certificates of Proficiency* are only issued on completion of each annual program of three “rounds”. Nowadays, ASPAC provides details of certified laboratories by test on its public web site. Certifications obtained in the 2008-09 Plants’ program remain valid until superseded by findings from the corresponding 2009-10 ILPP.

3. Summary Statistics

This section (continued overleaf) provides summary information and data (sometimes rounded only for table formatting purposes) on a test-by-test basis (alphabetical) for each of the 12 samples used across three “rounds” in 2008-09. The tabulations include values relevant to the iterative “median / MAD” procedure plus other parametric and robust statistics. For the meaning or derivation of the terms used in the tabulated summaries, see Table 3 and Appendix 3. All data are expressed on a dry weight basis.

2008-09: Aluminium (mg Al/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	23	23	23	23	21	21	21	21	21	21	21	21
Minimum i	44.1	136	1.12	13.5	58.1	87	0.58	89.1	0.7	267	6.83	46.9
Maximum i	132	284	68.7	70.4	172	210	35.6	375	50.4	895	913	511
Median i	84.4	221	4.29	29.3	149	184	7	276	5.9	693	704	67.8
Mean i	85.3	220	8.67	31.4	140	177	9.4	266	11.8	652	646	97.5
MAD i	5.17	20	2.29	4.7	18	13	3.4	22	4.41	115	43	9.2
IQR i	8.94	29.7	5	7.78	30.8	18.5	6.97	36	10.7	175	67.5	15.4
Robust CV% i	11	13	120	27	21	10	100	13	180	25	9.6	23
Median f	84	225	3.81	28.3	150	190	5.74	278	3.11	693	727	65.2
Mean f	83.4	223	4.66	28.7	144	190	7.43	275	4.78	652	723	65.8
MAD f	2.7	16.5	2.04	3.77	16	8	3.18	18	2.32	115	31	9.65
IQR f	6.82	28.5	3.21	6.86	31.5	13.7	4.89	28.7	4.47	175	46.7	14.5
Robust CV% f	8.1	13	84	24	21	7.2	85	10	140	25	6.4	22
Outliers	2	1	3	2	1	2	1	3	4	0	4	3
Stragglers	2	0	0	0	0	2	1	0	1	0	1	0

2008-09: Boron (mg B/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	28	28	27	28	26	26	26	26	25	25	25	25
Minimum i	7	21.4	0.001	5	4.19	36	0.03	2.5	0.569	6.83	10.3	16.3
Maximum i	56.8	73.7	46.1	52.4	26	180	40.5	48	22	28.1	39.3	56.6
Median i	21.9	38	0.936	19	10.2	147	1.75	23.15	2	14	23.3	34.1
Mean i	21.9	38	3.62	19.4	10.6	138	3.53	23.1	3.51	14.8	23.4	34.1
MAD i	1.9	2.75	0.489	1.55	0.75	7	0.585	1	0.93	1.9	2.8	2.75
IQR i	3.39	4.41	2.03	2	0.899	15.9	0.847	2.02	1.92	2.93	4.34	4.32
Robust CV% i	15	12	220	11	8.8	11	48	8.7	96	21	19	13
Median f	23	38.1	0.676	19	10.3	149	1.48	23.3	1.51	14	23.3	34.1
Mean f	22.3	37.5	0.646	18.7	10.4	149	1.46	23.1	1.71	14	23.2	33.9
MAD f	0.95	2.3	0.24	1.35	0.5	6	0.55	0.8	0.49	1.4	2.7	1.75
IQR f	2.12	2.74	0.373	2	0.812	8.9	0.827	1.33	0.89	2.26	4.08	2.74
Robust CV% f	9.2	7.2	55	11	7.9	6	56	5.7	59	16	17	8
Outliers	4	5	7	2	4	6	4	5	4	2	2	3
Stragglers	2	0	2	0	1	1	1	0	2	1	0	2

2008-09: Cadmium (mg Cd/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	13	13	13	13	13	13	13	13	13	13	13	13
Minimum i	0.011	0.014	0.002	0.053	0	0.005	0.001	0.013	0.001	0.008	0.001	0.029
Maximum i	0.080	0.121	0.056	0.249	0.112	0.122	0.089	0.165	0.037	0.085	0.21	0.139
Median i	0.033	0.040	0.007	0.168	0.027	0.031	0.006	0.052	0.005	0.064	0.01	0.1
Mean i	0.034	0.046	0.013	0.171	0.034	0.0411	0.016	0.061	0.0075	0.056	0.033	0.098
MAD i	0.006	0.008	0.005	0.017	0.003	0.0032	0.004	0.008	0.003	0.016	0.007	0.016
IQR i	0.0098	0.012	0.011	0.041	0.010	0.0129	0.013	0.012	0.005	0.026	0.015	0.027
Robust CV% i	30	30	150	24	36	42	220	23	96	41	150	27
Median f	0.031	0.040	0.0053	0.167	0.027	0.0295	0.0029	0.052	0.0046	0.064	0.009	0.1
Mean f	0.030	0.040	0.0082	0.166	0.028	0.0297	0.0037	0.051	0.0050	0.056	0.0095	0.098
MAD f	0.0046	0.0078	0.0033	0.004	0.002	0.0017	0.0009	0.0016	0.0026	0.016	0.007	0.016
IQR f	0.0078	0.0112	0.0089	0.008	0.003	0.0035	0.0028	0.0027	0.0046	0.026	0.011	0.027
Robust CV% f	25	28	170	4.8	11	12	97	5.1	100	41	130	27
Outliers	1	1	1	2	4	4	3	2	1	0	2	0
Stragglers	0	0	1	3	1	1	1	4	0	0	0	0

2008-09: Calcium (%Ca)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	35	35	35	35	34	34	34	34	32	32	32	31
Minimum i	0.084	1.12	0.001	0.010	0.431	0.563	0.006	0.242	0.001	0.475	0.126	0.12
Maximum i	1.09	1.77	0.076	0.938	0.666	1.03	0.07	0.793	0.03	1.0	0.567	0.47
Median i	0.815	1.52	0.006	0.642	0.552	0.856	0.033	0.670	0.004	0.889	0.436	0.381
Mean i	0.802	1.51	0.012	0.603	0.548	0.85	0.034	0.648	0.007	0.867	0.427	0.369
MAD i	0.047	0.07	0.002	0.045	0.03	0.048	0.004	0.038	0.002	0.024	0.020	0.021
IQR i	0.075	0.104	0.004	0.081	0.050	0.072	0.006	0.069	0.005	0.040	0.036	0.030
Robust CV% i	9.2	6.8	70	13	9	8.4	19	10	110	4.6	8.3	7.8
Median f	0.815	1.53	0.005	0.643	0.554	0.862	0.032	0.672	0.004	0.889	0.436	0.383
Mean f	0.813	1.52	0.005	0.634	0.551	0.866	0.032	0.67	0.005	0.887	0.44	0.388
MAD f	0.043	0.062	0.001	0.032	0.025	0.048	0.003	0.024	0.002	0.016	0.010	0.018
IQR f	0.059	0.093	0.001	0.055	0.044	0.071	0.004	0.035	0.004	0.029	0.016	0.026
Robust CV% f	7.3	6.1	21	8.5	7.9	8.2	13	5.2	92	3.3	3.7	6.7
Outliers	4	2	6	4	1	2	6	3	4	5	7	5
Stragglers	0	1	6	1	2	0	0	3	0	3	3	1

2008-09: Carbon (%C)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	16	16	16	16	15	15	15	15	15	15	15	15
Minimum i	48.7	40.6	38.5	36.7	39.8	41.7	38.2	39.1	39.6	39.7	45.4	38.4
Maximum i	56.6	54	58.6	54.7	49.6	49.5	51.2	47.2	52.2	48.6	51.42	48.3
Median i	51.6	43.2	42.3	40.1	43.8	45.7	43.3	42.8	43.8	43.5	49	41.2
Mean i	51.7	43.8	42.8	40.6	43.9	45.7	42.9	43	43.7	43.4	48.6	41.6
MAD i	1.4	1.15	1.93	1.37	0.7	0.8	1.3	1.3	1.2	1.5	0.8	0.9
IQR i	2.27	1.76	3.24	2.33	1.11	1.85	2.15	2	2.15	2.59	1.49	1.56
Robust CV% i	4.4	4.1	7.7	5.8	2.5	4.1	5	4.7	4.9	6	3	3.8
Median f	51.7	43.2	42.1	40	43.8	45.7	42.9	42.8	43.8	43.5	49.4	41.2
Mean f	51.7	43.1	41.8	39.7	43.8	45.7	42.3	43	43.1	43.4	49.2	41.2
MAD f	1.4	1.1	2.1	1.33	0.7	0.8	1.1	1.3	1.15	1.5	0.4	0.75
IQR f	2.27	1.56	3.04	2.3	1	1.41	2.09	2	2.15	2.59	0.96	1.22
Robust CV% f	4.4	3.6	7.2	5.7	2.3	3.1	4.9	4.7	4.9	6	2	3
Outliers	0	1	1	1	2	2	1	0	1	0	1	1
Stragglers	0	0	0	0	0	0	0	0	0	0	2	0

2008-09: Chloride (%Cl)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	19	19	19	19	20	20	20	20	20	20	20	20
Minimum i	0.242	0.76	0.02	0.198	0.0003	0.011	0.005	0.017	0.023	0.184	0.024	0.209
Maximum i	0.428	1.32	0.164	0.447	0.956	0.401	0.192	0.494	0.3	1.25	0.406	1.25
Median i	0.295	0.868	0.038	0.288	0.737	0.248	0.114	0.372	0.053	0.840	0.058	0.73
Mean i	0.309	0.902	0.053	0.296	0.721	0.258	0.116	0.371	0.069	0.81	0.096	0.736
MAD i	0.025	0.056	0.009	0.019	0.032	0.025	0.015	0.016	0.007	0.044	0.008	0.032
IQR i	0.04	0.092	0.02	0.030	0.055	0.052	0.022	0.043	0.011	0.070	0.031	0.056
Robust CV% i	14	11	53	11	7.5	21	20	11	20	8.4	54	7.7
Median f	0.293	0.86	0.036	0.288	0.734	0.242	0.114	0.37	0.052	0.841	0.055	0.73
Mean f	0.296	0.865	0.0391	0.293	0.74	0.246	0.118	0.38	0.052	0.834	0.054	0.728
MAD f	0.018	0.049	0.007	0.018	0.026	0.008	0.013	0.013	0.007	0.024	0.005	0.03
IQR f	0.033	0.081	0.012	0.028	0.039	0.018	0.021	0.018	0.001	0.051	0.007	0.045
Robust CV% f	11	9.4	34	9.7	5.4	7.7	19	5	19	6	13	6.2
Outliers	2	2	2	2	3	3	2	4	4	3	6	4
Stragglers	0	0	1	0	0	2	0	1	0	1	2	0

2008-09: Cobalt (mg Co/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	18	18	18	18	20	20	20	20	18	18	18	18
Minimum i	0.075	0.164	0.008	0.026	0.002	0.088	0	0.05	0.002	0.01	0.01	0.001
Maximum i	1	1	1	1	0.3	0.227	0.086	8.63	0.301	0.429	0.262	0.216
Median i	0.107	0.244	0.025	0.045	0.073	0.177	0.010	0.19	0.01	0.31	0.204	0.026
Mean i	0.165	0.287	0.102	0.106	0.085	0.172	0.020	0.695	0.031	0.299	0.192	0.043
MAD i	0.013	0.029	0.008	0.008	0.008	0.024	0.006	0.033	0.004	0.039	0.026	0.014
IQR i	0.024	0.045	0.047	0.011	0.014	0.039	0.012	0.197	0.011	0.061	0.038	0.031
Robust CV% i	22	18	190	25	19	22	130	100	110	20	19	120
Median f	0.101	0.234	0.023	0.043	0.073	0.177	0.009	0.181	0.008	0.31	0.211	0.024
Mean f	0.101	0.245	0.022	0.043	0.073	0.172	0.009	0.185	0.008	0.316	0.214	0.025
MAD f	0.01	0.026	0.003	0.005	0.005	0.024	0.003	0.018	0.002	0.038	0.020	0.011
IQR f	0.02	0.043	0.005	0.008	0.008	0.039	0.004	0.028	0.004	0.054	0.031	0.018
Robust CV% f	20	18	20	19	11	22	49	16	46	17	15	74
Outliers	2	1	5	3	7	0	4	6	3	1	2	2
Stragglers	1	0	1	0	0	0	1	0	2	0	0	1

2008-09: Copper (mg Cu/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	32	32	32	32	33	33	33	33	29	29	29	29
Minimum i	1	4.76	0.331	1	0.66	0.74	0.62	0.5	0.46	0.60	0.94	4.05
Maximum i	17.5	15.9	15.3	13.4	13	12	8.6	9.68	9	18.3	27.6	30.7
Median i	5.41	8.76	2.70	2.84	8.72	9.51	3.94	3.84	1.25	7.05	19.9	9.88
Mean i	5.49	8.75	3.14	3.1	8.2	9.21	3.79	4.38	1.58	7.3	19.6	10.3
MAD i	0.353	0.455	0.43	0.36	0.63	0.79	0.41	0.54	0.25	0.7	1.6	0.9
IQR i	0.634	0.702	0.643	0.54	1.05	1.03	0.878	1.04	0.394	1.01	1.78	1.09
Robust CV% i	12	8	24	19	12	11	22	27	31	14	8.9	11
Median f	5.45	8.8	2.70	2.83	8.8	9.53	3.95	3.82	1.22	7.05	19.9	9.88
Mean f	5.42	8.74	2.72	2.77	8.74	9.59	3.96	3.84	1.17	7.09	20.1	9.72
MAD f	0.25	0.3	0.3	0.19	0.39	0.44	0.26	0.34	0.17	0.44	0.9	0.44
IQR f	0.374	0.5	0.423	0.42	0.6	0.78	0.437	0.547	0.251	0.712	1.56	0.77
Robust CV% f	6.9	5.7	16	15	6.8	8.4	11	14	21	10	7.8	7.8
Outliers	6	5	5	4	5	3	6	9	3	4	4	7
Stragglers	1	2	2	3	1	2	2	0	1	1	0	1

2008-09: Iron (mg Fe/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**10**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	32	32	32	31	33	33	33	33	30	30	30	30
Minimum i	36.3	128	0.75	25.7	34.7	127	10.4	93.6	4.59	258	14	2.75
Maximum i	84.8	232	50.7	53.5	128	197	59	324	57.4	599	104	80.5
Median i	68.1	181	4.52	35.3	94	155	25.6	172	14.45	522	75.3	18.8
Mean i	67.7	184	8.4	36.6	93.6	158	27.2	174	16.7	505	76.9	22.9
MAD i	5	13	1.75	3.1	9	9	3.1	17	2.05	26	3.6	3.18
IQR i	7.78	16.9	6.4	4.52	13.7	19.6	4.97	27.8	3.84	38	10.6	5.11
Robust CV% i	11	9.3	140	13	15	13	19	16	27	7.3	14	27
Median f	68.2	181	4.01	34.8	95.9	155	25.5	172	14.2	524	74.7	18.4
Mean f	68.7	184	4.31	34.7	95.5	157	25.6	172	14.6	521	74.9	18.4
MAD f	5.1	11.5	1.17	2.5	9.9	9	2	17	0.8	23	1.4	2.7
IQR f	8.01	15	1.99	3.93	13.3	18.9	3.21	26.7	1.61	34	2.45	4.55
Robust CV% f	12	8.3	50	11	14	12	13	16	11	6.5	3.3	25
Outliers	1	2	8	3	1	1	6	2	6	3	10	5
Stragglers	0	0	0	1	0	0	1	0	6	0	2	0

2008-09: Lead (mg Pb/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	10	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	11	10	10	10	12	12	12	12	11	11	11	11
Minimum i	0.02	0.01	0.00	0.01	0.001	0.081	0.00	0.001	0.01	0.064	0.054	0.008
Maximum i	0.595	0.376	0.472	0.369	0.748	0.498	0.339	0.607	0.32	0.423	0.518	0.402
Median i	0.185	0.158	0.03	0.060	0.108	0.260	0.033	0.153	0.106	0.355	0.32	0.108
Mean i	0.223	0.185	0.105	0.119	0.179	0.28	0.098	0.186	0.118	0.313	0.293	0.136
MAD i	0.062	0.068	0.028	0.032	0.057	0.053	0.030	0.044	0.088	0.061	0.083	0.056
IQR i	0.084	0.156	0.115	0.15	0.108	0.104	0.121	0.075	0.129	0.19	0.188	0.088
Robust CV% i	46	99	380	250	100	40	370	49	120	53	59	82
Median f	0.183	0.159	0.028	0.038	0.099	0.261	0.029	0.141	0.106	0.355	0.32	0.092
Mean f	0.185	0.185	0.033	0.044	0.127	0.28	0.037	0.132	0.118	0.313	0.293	0.109
MAD f	0.056	0.068	0.023	0.011	0.044	0.053	0.019	0.026	0.088	0.061	0.083	0.055
IQR f	0.085	0.156	0.036	0.034	0.102	0.104	0.039	0.057	0.129	0.19	0.188	0.091
Robust CV% f	47	99	130	90	100	40	130	40	120	53	59	99
Outliers	1	0	2	2	1	0	3	1	0	0	0	1
Stragglers	0	0	0	1	0	0	0	1	0	0	0	0

2008-09: Magnesium (%Mg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	35	35	35	35	34	34	34	34	32	32	32	32
Minimum i	0.107	0.191	0.012	0.097	0.146	0.131	0.064	0.129	0.038	0.070	0.108	0.066
Maximum i	0.181	0.885	0.049	0.16	0.231	0.421	0.923	0.243	0.095	0.185	0.31	0.94
Median i	0.144	0.225	0.021	0.121	0.188	0.262	0.089	0.163	0.08	0.138	0.229	0.133
Mean i	0.145	0.243	0.021	0.123	0.186	0.268	0.113	0.165	0.080	0.137	0.227	0.159
MAD i	0.007	0.011	0.0016	0.008	0.002	0.018	0.006	0.008	0.003	0.005	0.014	0.008
IQR i	0.010	0.0178	0.002	0.010	0.016	0.028	0.011	0.013	0.006	0.007	0.020	0.014
Robust CV% i	6.7	7.9	11	8.6	8.7	11	12	7.7	7.4	5.2	8.6	10
Median f	0.144	0.223	0.021	0.12	0.188	0.262	0.089	0.163	0.08	0.138	0.229	0.132
Mean f	0.144	0.223	0.021	0.121	0.186	0.264	0.089	0.163	0.080	0.137	0.23	0.134
MAD f	0.006	0.013	0.001	0.007	0.009	0.017	0.006	0.008	0.003	0.005	0.010	0.007
IQR f	0.001	0.016	0.002	0.010	0.015	0.026	0.01	0.011	0.004	0.007	0.017	0.011
Robust CV% f	6.7	7.3	7.2	8.6	7.8	9.9	11	6.8	4.6	5	7.6	8.1
Outliers	3	2	3	2	2	3	3	3	5	2	3	3
Stragglers	1	0	1	0	0	0	0	0	0	0	1	0

2008-09: Manganese (mg Mn/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	33	33	33	33	34	34	34	34	31	31	31	31
Minimum i	0.52	34.4	4.23	19.9	49.2	32.6	5.3	26	1.67	40.9	11.6	6.7
Maximum i	775	49.6	12.4	29.7	190	285	13	54	17.7	93.5	359	269
Median i	689	42.8	9.46	24.8	59.9	238	9.80	39.5	3.9	83.4	301	14.5
Mean i	654	42.7	9.22	24.8	63.2	233	9.71	39.3	4.28	82.8	292	23.4
MAD i	30	2.25	0.72	1.2	2.5	11	0.7	2.55	0.38	2.3	14	1.4
IQR i	47.8	2.82	1.01	1.93	3.89	16.5	1.07	3.61	0.6	4.08	20.2	2.15
Robust CV% i	6.9	6.6	11	7.8	6.5	6.9	11	9.1	15	4.9	6.7	15
Median f	693	42.8	9.48	24.8	60	240	9.81	39.5	3.93	83.1	301	14
Mean f	693	42.7	9.37	24.9	60	239	9.86	38.9	3.97	83.1	303	14.2
MAD f	26	2.25	0.675	1	2.4	10	0.59	2.5	0.385	1.5	10.2	1
IQR f	39.3	2.82	0.947	1.59	3.56	14.8	1.04	3.56	0.562	2.67	17	1.39
Robust CV% f	5.7	6.6	10	6.4	5.9	6.2	11	9	14	3.2	5.7	9.9
Outliers	4	0	3	2	3	3	3	3	3	5	3	5
Stragglers	0	0	0	1	0	0	0	0	0	4	1	2

2008-09: Molybdenum (mg Mo/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	20	20	20	20	19	19	19	19	18	18	18	18
Minimum i	0.001	0.098	0.198	0.287	0.1	0.658	0.1	0.584	0.019	0.082	0.004	0.007
Maximum i	10.8	10.8	10.8	10.8	0.611	1.17	0.836	1.02	0.636	0.833	0.311	0.377
Median i	0.064	0.402	0.818	0.350	0.226	0.748	0.207	0.694	0.144	0.19	0.031	0.028
Mean i	0.713	1.03	1.31	1.08	0.283	0.791	0.255	0.731	0.21	0.259	0.076	0.074
MAD i	0.043	0.074	0.083	0.028	0.043	0.055	0.035	0.047	0.064	0.029	0.022	0.017
IQR i	0.134	0.175	0.143	0.067	0.063	0.115	0.091	0.071	0.097	0.087	0.073	0.031
Robust CV% i	210	44	18	19	28	15	44	10	67	46	230	110
Median f	0.027	0.386	0.818	0.338	0.223	0.746	0.192	0.688	0.136	0.183	0.01	0.026
Mean f	0.036	0.377	0.835	0.339	0.217	0.756	0.191	0.685	0.138	0.186	0.019	0.027
MAD f	0.006	0.024	0.062	0.013	0.0145	0.047	0.022	0.040	0.043	0.012	0.002	0.01
IQR f	0.019	0.057	0.095	0.021	0.028	0.079	0.038	0.062	0.071	0.019	0.014	0.017
Robust CV% f	70	15	12	6.1	13	11	20	9	52	10	150	68
Outliers	3	3	4	4	4	2	3	3	3	3	4	3
Stragglers	5	3	0	1	1	0	1	0	0	4	3	1

2008-09: Nitrogen (%N)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	33	33	33	33	32	32	32	32	32	32	32	32
Minimum i	0.001	0.016	0.00	0.080	1.37	1.23	1.15	1.52	0.00	0.010	0.000	0.002
Maximum i	23.5	27.2	11.6	17.8	2.22	4.55	2.58	5.36	1.53	2.1	4.18	1.65
Median i	2.48	2.87	1.23	1.89	1.63	2.10	1.29	4.80	1.31	1.82	3.80	1.49
Mean i	3.04	3.57	1.53	2.39	1.66	2.17	1.36	4.56	1.32	1.76	3.59	1.45
MAD i	0.078	0.08	0.07	0.108	0.095	0.09	0.085	0.115	0.048	0.08	0.165	0.075
IQR i	0.122	0.148	0.107	0.155	0.137	0.152	0.124	0.217	0.13	0.128	0.245	0.132
Robust CV% i	4.9	5.2	8.7	8.2	8.4	7.2	9.6	4.5	9.9	7	6.4	8.8
Median f	2.48	2.85	1.22	1.87	1.62	2.11	1.25	4.81	1.31	1.83	3.83	1.5
Mean f	2.48	2.86	1.24	1.89	1.64	2.12	1.27	4.79	1.32	1.85	3.85	1.5
MAD f	0.066	0.06	0.062	0.08	0.08	0.085	0.06	0.1	0.03	0.07	0.13	0.06
IQR f	0.107	0.104	0.098	0.141	0.13	0.135	0.109	0.161	0.052	0.131	0.234	0.119
Robust CV% f	4.3	3.6	8.1	7.5	8	6.4	8.8	3.4	4	7.1	6.1	7.9
Outliers	6	4	3	4	1	4	3	4	3	2	3	1
Stragglers	0	2	0	0	1	0	1	2	5	0	0	0

2008-09: Phosphorus (%P)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	33	33	33	33	34	34	34	34	31	31	31	31
Minimum i	0.106	0.203	0.078	0.233	0.107	0.142	0.18	0.26	0.025	0.106	0.161	0.087
Maximum i	0.22	0.303	0.143	0.354	0.489	0.7	0.68	0.967	0.568	0.648	0.776	0.639
Median i	0.146	0.229	0.098	0.273	0.244	0.182	0.312	0.718	0.213	0.215	0.343	0.188
Mean i	0.149	0.234	0.099	0.278	0.245	0.212	0.327	0.695	0.216	0.228	0.353	0.203
MAD i	0.008	0.012	0.007	0.018	0.015	0.010	0.016	0.042	0.011	0.011	0.02	0.005
IQR i	0.013	0.018	0.011	0.027	0.027	0.019	0.023	0.058	0.018	0.022	0.027	0.015
Robust CV% i	8.9	7.9	11	9.9	11	10	7.4	8.1	8.4	10	8	7.9
Median f	0.145	0.228	0.097	0.272	0.244	0.182	0.31	0.718	0.213	0.215	0.343	0.187
Mean f	0.143	0.227	0.098	0.273	0.242	0.181	0.312	0.715	0.213	0.217	0.343	0.187
MAD f	0.005	0.010	0.006	0.017	0.011	0.008	0.013	0.025	0.01	0.01	0.016	0.002
IQR f	0.009	0.014	0.010	0.024	0.022	0.013	0.019	0.039	0.016	0.018	0.026	0.004
Robust CV% f	6.1	6.3	10	8.7	9	6.9	6.2	5.4	7.3	8.3	7.7	2.2
Outliers	5	3	1	2	2	6	4	6	4	2	3	8
Stragglers	1	0	0	0	2	1	3	1	0	0	0	5

2008-09: Potassium (%K)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	34	34	34	34	35	35	35	35	32	32	32	32
Minimum i	0.425	0.179	0.034	0.12	0.192	0.247	0.052	0.489	0.138	0.167	0.967	1.39
Maximum i	0.825	2.07	0.998	3.19	3.94	3.2	3.2	4.71	0.553	2.72	2.52	3.831
Median i	0.66	1.83	0.097	2.65	1.43	1.84	0.398	3.69	0.269	1.695	1.87	2.575
Mean i	0.644	1.74	0.125	2.55	1.48	1.82	0.525	3.49	0.278	1.64	1.83	2.53
MAD i	0.04	0.085	0.013	0.19	0.084	0.14	0.035	0.24	0.024	0.1	0.08	0.155
IQR i	0.055	0.137	0.018	0.287	0.119	0.215	0.057	0.393	0.038	0.158	0.152	0.291
Robust CV% i	8.4	7.5	18	11	8.3	12	14	11	14	9.3	8.1	11
Median f	0.662	1.85	0.096	2.66	1.42	1.83	0.397	3.73	0.269	1.7	1.87	2.61
Mean f	0.654	1.85	0.098	2.65	1.42	1.84	0.399	3.74	0.273	1.68	1.85	2.57
MAD f	0.032	0.085	0.012	0.16	0.071	0.1	0.03	0.13	0.023	0.09	0.065	0.1
IQR f	0.050	0.122	0.015	0.261	0.111	0.163	0.045	0.215	0.036	0.13	0.1	0.191
Robust CV% f	7.5	6.6	16	9.8	7.8	8.9	11	5.8	13	7.6	5.4	7.3
Outliers	2	4	3	2	4	4	5	6	2	3	6	5
Stragglers	2	0	1	0	0	1	1	2	0	0	2	1

2008-09: Selenium (mg Se/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	11	11	11	11	11	11	11	11	11	11	11	11
Minimum i	0.001	0.005	0.001	0.009	0.009	0.009	0.005	0.009	0.01	0.001	0.01	0.01
Maximum i	0.795	0.627	0.509	0.901	0.667	0.542	0.057	0.363	1.87	1.75	2.32	2.51
Median i	0.05	0.042	0.032	0.153	0.194	0.03	0.013	0.19	0.046	0.036	0.082	0.074
Mean i	0.225	0.119	0.074	0.205	0.239	0.115	0.017	0.186	0.273	0.271	0.37	0.331
MAD i	0.049	0.012	0.008	0.025	0.037	0.016	0.005	0.02	0.009	0.035	0.04	0.064
IQR i	0.31	0.096	0.016	0.033	0.061	0.102	0.008	0.063	0.087	0.156	0.27	0.192
Robust CV% i	620	230	52	21	31	340	59	33	190	430	330	260
Median f	0.045	0.036	0.03	0.153	0.187	0.023	0.013	0.192	0.045	0.015	0.07	0.073
Mean f	0.048	0.034	0.025	0.146	0.189	0.024	0.013	0.202	0.043	0.028	0.061	0.113
MAD f	0.015	0.009	0.007	0.017	0.023	0.007	0.004	0.014	0.004	0.014	0.024	0.06
IQR f	0.016	0.016	0.020	0.024	0.046	0.012	0.007	0.048	0.009	0.019	0.030	0.147
Robust CV% f	36	44	67	16	25	52	53	25	20	130	42	200
Outliers	4	3	2	3	3	4	1	3	3	4	4	1
Stragglers	0	0	0	1	0	0	0	0	1	0	0	0

2008-09: Silicon (%Si)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	7	7	7	7	6	6	6	6	6	6	6	6
Minimum i	0.008	0.019	0.00	0.00	0.039	0.081	0.002	0.002	0.001	0.003	0.002	0.001
Maximum i	146	387	21.5	134	1.25	0.472	0.226	0.054	0.035	0.894	0.054	0.079
Median i	0.035	0.134	0.002	0.008	0.565	0.266	0.026	0.037	0.006	0.282	0.012	0.004
Mean i	20.9	55.4	3.07	19.2	0.587	0.275	0.056	0.034	0.009	0.399	0.018	0.016
MAD i	0.023	0.097	0.002	0.006	0.469	0.159	0.015	0.017	0.003	0.243	0.007	0.002
IQR i	0.039	0.156	0.008	0.013	0.745	0.249	0.059	0.030	0.010	0.597	0.017	0.017
Robust CV% i	110	120	340	160	130	94	220	80	180	210	140	380
Median f	0.029	0.086	0.001	0.007	0.565	0.266	0.025	0.037	0.003	0.283	0.012	0.003
Mean f	0.032	0.11	0.002	0.009	0.587	0.275	0.022	0.034	0.004	0.399	0.018	0.004
MAD f	0.018	0.066	0.001	0.005	0.469	0.159	0.013	0.017	0.003	0.243	0.007	0.002
IQR f	0.030	0.15	0.003	0.011	0.745	0.249	0.021	0.030	0.005	0.597	0.017	0.004
Robust CV% f	110	170	440	170	130	94	84	80	160	210	140	140
Outliers	1	1	1	1	0	0	1	0	1	0	0	1
Stragglers	0	0	1	0	0	0	0	0	0	0	0	0

2008-09: Sodium (%Na)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	34	34	34	34	35	35	35	35	32	32	32	32
Minimum i	0.021	0.012	0.001	0.005	0.009	0.003	0.003	0.033	0.000	0.046	0.001	0.005
Maximum i	0.45	0.394	0.022	0.116	0.272	0.058	0.021	0.134	0.019	0.143	0.25	0.641
Median i	0.21	0.118	0.002	0.054	0.13	0.010	0.009	0.065	0.001	0.097	0.003	0.572
Mean i	0.202	0.121	0.004	0.056	0.124	0.015	0.010	0.069	0.003	0.097	0.017	0.535
MAD i	0.013	0.005	0.001	0.005	0.008	0.002	0.002	0.006	0.001	0.004	0.001	0.020
IQR i	0.022	0.010	0.003	0.008	0.014	0.007	0.003	0.009	0.001	0.006	0.005	0.032
Robust CV% i	10	8.6	140	15	11	66	36	14	110	6.3	160	5.5
Median f	0.213	0.119	0.001	0.054	0.13	0.01	0.008	0.065	0.001	0.097	0.002	0.576
Mean f	0.212	0.118	0.001	0.055	0.13	0.0102	0.008	0.066	0.001	0.097	0.002	0.575
MAD f	0.008	0.002	0.001	0.001	0.006	0.0006	0.001	0.005	0.001	0.003	0.001	0.014
IQR f	0.013	0.003	0.001	0.001	0.009	0.0012	0.002	0.0065	0.001	0.004	0.001	0.025
Robust CV% f	5.9	2.3	83	12	7.1	12	27	9.9	78	4.6	38	4.3
Outliers	6	8	6	4	6	9	4	6	6	5	8	5
Stragglers	1	6	3	0	1	3	4	0	0	0	2	2

2008-09: Sulfur (%S)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	27	27	27	27	25	25	25	25	25	25	25	25
Minimum i	0.071	0.137	0.065	0.36	0.138	0.232	0.064	0.488	0.047	0.118	0.125	0.075
Maximum i	0.281	0.389	0.138	1.08	0.21	0.35	0.13	1.02	0.137	0.279	0.381	0.191
Median i	0.168	0.243	0.092	0.612	0.177	0.296	0.103	0.853	0.099	0.229	0.262	0.151
Mean i	0.172	0.247	0.091	0.61	0.173	0.296	0.101	0.846	0.010	0.229	0.268	0.152
MAD i	0.013	0.015	0.006	0.046	0.012	0.017	0.007	0.036	0.004	0.01	0.013	0.01
IQR i	0.015	0.017	0.010	0.081	0.019	0.029	0.011	0.061	0.007	0.015	0.018	0.012
Robust CV% i	8.8	7	10	13	11	9.8	11	7.2	7.2	6.6	7.1	7.6
Median f	0.168	0.243	0.093	0.612	0.177	0.296	0.103	0.853	0.010	0.228	0.262	0.151
Mean f	0.17	0.246	0.092	0.601	0.173	0.296	0.102	0.856	0.098	0.228	0.264	0.15
MAD f	0.012	0.015	0.004	0.045	0.012	0.017	0.006	0.029	0.004	0.006	0.012	0.004
IQR f	0.013	0.017	0.009	0.078	0.019	0.029	0.010	0.046	0.005	0.011	0.017	0.007
Robust CV% f	7.9	6.9	9.6	13	11	9.8	9.4	5.4	5.4	4.9	6.6	4.8
Outliers	4	2	2	2	0	0	1	3	3	3	4	2
Stragglers	0	0	2	0	0	0	1	1	0	1	0	3

2008-09: Zinc (mg Zn/kg)

Statistical parameters	Plant sample identification and values											
	October 2008 (Round 108)				*February 2009 (Round 308)*				*April 2009 (Round 508)*			
	ASP	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**	**ASP**
	101	**102**	**103**	**104**	**21**	**22**	**23**	**24**	**41**	**42**	**43**	**44**
No of results	34	34	34	34	34	34	34	34	34	34	34	34
Minimum i	16.3	16	4.82	12	18	30.1	12.1	23.6	18	30.1	12.1	23.6
Maximum i	43.7	81.9	17.2	30.3	38.5	51.3	27.3	46.6	38.5	51.3	27.3	46.6
Median i	21.8	22.0	15.1	16.0	23.8	43.9	20.2	32.0	23.8	43.9	20.2	32.0
Mean i	22.2	23.6	14.5	16.4	24	43.7	19.8	32.3	24	43.7	19.8	32.3
MAD i	0.8	1.15	1.1	1.03	1.5	2.3	1.3	2	1.5	2.3	1.3	2
IQR i	1.28	1.52	1.76	1.56	2.26	3.76	2.22	3.08	2.26	3.76	2.22	3.08
Robust CV% i	5.9	6.9	12	9.8	9.5	8.6	11	9.6	9.5	8.6	11	9.6
Median f	21.8	22.1	15.2	15.8	23.8	44	20.4	32	23.8	44	20.4	32
Mean f	21.8	22	15	15.9	23.6	44.4	20.4	32.1	23.6	44.4	20.4	32.1
MAD f	0.67	1	0.8	1	1.4	2.05	1.1	1.8	1.4	2.05	1.1	1.8
IQR f	1.04	1.47	1.33	1.59	2.15	3.71	1.59	2.87	2.15	3.71	1.59	2.87
Robust CV% f	4.8	6.7	8.8	10	9	8.4	7.8	9	9	8.4	7.8	9
Outliers	5	2	2	2	3	2	4	2	3	2	4	2
Stragglers	3	0	1	0	0	0	1	0	0	0	1	0

4. Comments on Measurement Performance

A detailed evaluation of measurement performance is beyond the scope of this report. Such evaluations are typically made at ASPAC Workshops and in other national and international forums. However, it is appropriate to make a few observations.

Firstly, the summaries in Section 3 show examples of skewed data, particularly for Si, Se and Pb, i.e. there were quite large differences at times between the median and mean values reported by laboratories. This emphasised the importance of using medians and MADs, which are less influenced by 'rogue' results in small data sets.

Secondly, the median robust % CVs across the 12 samples, after the removal of "outliers" and "stragglers", ranged from 4.5 to 140%. This covered the 21 tests reported by a minimum of six laboratories. Table 4 provides the identity of the six best and six worst tests, with their corresponding median robust %CVs. Data in brackets show corresponding CV's for the 2006-07 plant exchange. There were some "round-by-round" fluctuations in measurement performance by test, but total C always had the lowest robust %CVs and Si the highest. Overall, 11 of the 21 tests had median CVs of <10%, with another four being <15%. Silicon is the only test with CV >100% and shows that there is still a major issue with the methodologies used by the participating laboratories.

Thirdly, the median robust %CV across the 21 tests on a sample-by-sample basis ranged from 7.3% (ASP 102) to 13% (ASP 23 and ASP 41), with a grand median for the 12 samples of 8.7%. Sample ASP 41 had very low to low concentrations for all analytes except C, N and P. Accordingly no sample was considered outstandingly more difficult than others to analyse.

Table 4. The six best performed and worst performed plant chemical tests in 2008-09, based on median percent robust coefficients of variation after the removal of "outliers" and "stragglers". Numbers in brackets show corresponding performance data for 2006-07.

Best (Lowest Robust %CVs)	
Plant test	***%CV***
Carbon	4.5 (4.4)
Manganese	6.5 (6.8)
Nitrogen	6.7 (6.1)
Phosphorus	7.1 (6.6)
Sulfur	7.4 (8.6)
Calcium	7.6 (8.3)

Worst (Highest Robust %CVs)	
Plant test	***%CV***
Molybdenum	13.5 (27)
Cobalt	20 (31.5)
Cadmium	28 (22.5)
Selenium	48 (50)
Lead	94 (54)
Silicon	140 (110)

Appendix 1: List of laboratories who participated in ASPAC's Plant ILPP in 2008-09

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Appendix 2: Summary examples of homogeneity data and statistical Assessments for plant samples used in the ASPAC Plant ILPP in 2008-09*.

Sample name		***ASP 101***	***ASP 102***	***ASP 103***	***ASP 104***	***ASP 21***	***ASP 22***	***ASP 23***	***ASP 24***	***ASP 41***	***ASP 42***	***ASP 43***	***ASP 44***
Test Method		*Dumas N*	*Dumas N*	*Dumas N*	*Dumas N*	*Dumas N*	*Dumas N*	*Dumas N*	*Dumas N*	*Dumas N*	*Dumas N*	*Dumas N*	*Dumas N*
Sample 1	*replicate 1*	*2.44*	*2.91*	*1.19*	*2.03*	*1.64*	*2.20*	*1.19*	*4.83*	*1.43*	*1.74*	*4.03*	*1.54*
	replicate 2	*2.43*	*2.86*	*1.12*	*2.05*	*1.58*	*2.19*	*1.18*	*4.85*	*1.38*	*1.71*	*3.92*	*1.56*
Sample 2	*replicate 1*	*2.50*	*3.05*	*1.17*	*2.04*	*1.63*	*2.27*	*1.17*	*4.88*	*1.43*	*1.77*	*3.97*	*1.50*
	replicate 2	*2.52*	*3.00*	*1.15*	*2.03*	*1.58*	*2.22*	*1.20*	*4.90*	*1.42*	*1.69*	*3.93*	*1.55*
Sample 3	*replicate 1*	*2.46*	*2.90*	*1.15*	*2.03*	*1.53*	*2.22*	*1.17*	*4.90*	*1.44*	*1.80*	*4.03*	*1.52*
	replicate 2	*2.43*	*2.83*	*1.14*	*2.04*	*1.56*	*2.22*	*1.19*	*4.86*	*1.40*	*1.75*	*3.99*	*1.54*
Sample 4	*replicate 1*	*2.50*	*2.96*	*1.15*	*2.07*	*1.56*	*2.18*	*1.19*	*4.89*	*1.42*	*1.74*	*3.93*	*1.51*
	replicate 2	*2.46*	*2.91*	*1.15*	*2.03*	*1.54*	*2.18*	*1.21*	*4.82*	*1.44*	*1.70*	*3.93*	*1.59*
Sample 5	*replicate 1*	*2.51*	*2.93*	*1.13*	*2.06*	*1.55*	*2.20*	*1.20*	*4.87*	*1.44*	*1.79*	*3.94*	*1.50*
	replicate 2	*2.46*	*2.86*	*1.14*	*2.03*	*1.55*	*2.22*	*1.19*	*4.80*	*1.41*	*1.76*	*4.02*	*1.55*
Sample 6	*replicate 1*	*2.52*	*2.98*	*1.14*	*2.05*	*1.61*	*2.14*	*1.18*	*4.89*	*1.44*	*1.78*	*3.95*	*1.49*
	replicate 2	*2.45*	*2.90*	*1.14*	*2.03*	*1.56*	*2.18*	*1.20*	*4.92*	*1.39*	*1.83*	*3.99*	*1.57*
Sample 7	*replicate 1*	*2.48*	*2.92*	*1.15*	*2.06*	*1.57*	*2.20*	*1.19*	*4.83*	*1.46*	*1.77*	*3.92*	*1.55*
	replicate 2	*2.49*	*2.86*	*1.17*	*2.03*	*1.57*	*2.20*	*1.16*	*4.88*	*1.43*	*1.75*	*3.99*	*1.58*
Sample 8	*replicate 1*	*2.50*	*2.91*	*1.10*	*2.07*	*1.54*	*2.23*	*1.15*	*4.88*	*1.43*	*1.74*	*3.95*	*1.50*
	replicate 2	*2.44*	*2.90*	*1.16*	*2.07*	*1.55*	*2.22*	*1.17*	*4.86*	*1.41*	*1.78*	*3.90*	*1.52*
Sample 9	*replicate 1*	*2.47*	*2.84*	*1.14*	*2.03*	*1.55*	*2.20*	*1.18*	*4.89*	*1.46*	*1.80*	*3.94*	*1.49*
	replicate 2	*2.48*	*2.78*	*1.08*	*2.01*	*1.53*	*2.20*	*1.18*	*4.86*	*1.42*	*1.74*	*3.92*	*1.46*
Sample 10	*replicate 1*	*2.46*	*2.90*	*1.15*	*2.04*	*1.57*	*2.23*	*1.17*	*4.90*	*1.39*	*1.80*	*3.90*	*1.49*
	replicate 2	*2.46*	*2.89*	*1.15*	*2.03*	*1.59*	*2.21*	*1.18*	*4.84*	*1.43*	*1.76*	*3.84*	*1.51*
Mean		*2.47*	*2.91*	*1.14*	*2.04*	*1.57*	*2.21*	*1.18*	*4.87*	*1.424*	*1.759*	*3.949*	*1.525*
Analytical Variance		*0.00065*	*0.001407*	*0.000648*	*0.00026*	*0.00049*	*0.00023*	*0.00019*	*0.00097*	*0.00069*	*0.00115*	*0.00172*	*0.0011*
Sampling Variance		*0.00014*	*0.002563*	*0*	*0.000017*	*0.00041*	*0.00046*	*0.00005*	*0*	*0*	*0.00015*	*0.00067*	*0.0028*
SD of proficiency data		*0.086*	*0.104*	*0.104*	*0.111*	*00.1186*	*0.11119*	*0.08154*	*0.1334*	*0.03706*	*0.10378*	*0.20015*	*0.0815*
Homogeneity index		*0.136*	*0.487***	*0*	*0.037*	*0.17*	*0.193*	*0.0889*	*0*	*0*	*0.1195*	*0.1289*	*0.1462*
Status		***H***	***H***	***H***	***H***	***H***	***H***	***H***	***H***	***H***	***H***	***H***	***H***

* Homogeneity statistics calculated according to *Thompson, M., Ellison, S.L.R. and Wood, R. (2006). "The International Harmonised Protocol for the Proficiency Testing of Analytical Chemistry Laboratories." Pure Appl. Chem. Vol. 78, No. 1, pp. 145-196. IUPAC Technical Report.*

** Although the homogeneity Index is >0.3 for ASP 102, there was no statistically significant sample-to-sample differences and proficiency assessments were not unduly influenced.

Appendix 3: Statistical procedures used by ASPAC for its Plant ILPP

Refer to Table 3 for a description of most statistical terms and their meaning. Of most significance is the "median / MAD" non-parametric, iterative procedure for identifying "outliers" (††) and "stragglers" (†) within datasets for particular tests and samples from multiple (typically 6 or greater) laboratories. See references in the body of the report for more details. The median is regarded as a good estimate of the true mean (μ), while the MAD; ie. the median of the absolute deviations from the median, is regarded as a good estimate of the standard deviation (@).

After tabulating the data with a separate column for each sample result and a separate row for each laboratory, calculations were applied iteratively. Each iteration operated at an action level of [(X- μ)/f@] (called the "ASPAC Score" for convenience) > 2, where "X" is the value reported by the laboratory (one replicate assumed), "μ" is the median of the population of values, and "f@" is a code for the Gaussian distribution of the sample size "n", approximated by (0.7722 + 1.604/n * t, with t = the Student's "t" for 2.5% (two-tailed) with n-1 degrees of freedom. Excluding any case when a laboratory reported no result (or a non-numeric value), the laboratories at first iteration with an "ASPAC score" > 2 were rated as "outliers" (††).

Following their removal (if any), the remaining population of laboratory data was subject to a second iteration involving a recalculation of the "ASPAC score". Where this was again >2, the relevant laboratories were rated as "stragglers" (†).

Further iterations can be undertaken if the sample is targeted for upgrading to the status of a reference, only to converge the mean and the median, thereby providing a more likely "correct" reference result.

The other statistics summarised in Table 3 were calculated on the same populations of data. However, only the first (i) and second (final; f) values appear in the data summaries in Section 3.

Appendix 4: "Raw" program data for the 12 samples across three "rounds"

These tabulations list, in alphabetical order, the "raw" data provided by participating laboratories for each method, with unnecessary precision removed after completion of statistical tests only to assist data presentation. Statistical "outliers" and "stragglers" are indicated by †† and †, respectively. All results are on an oven dry basis.

Method Codes shown in Appendix 4 are explained in Tables 5 and 6.

Table 5. ASPAC Codes to allow the laboratory to record the preparation, extraction and/or digestion techniques used for each plant test/element reported in ASPAC's Inter-laboratory Proficiency Program. A separate ASPAC Code (see Table 6) is required to identify the relevant instrumental and/or analytical finishes.

Preparation / Extraction / Digestion Technique	ASPAC MIC Code
Dry Ashing with HF, and uptake in HCl	AA
Dry Ashing with HF, and uptake in HNO_3	AB
Dry Ashing with HF, and uptake in H_2SO_4	AC
Dry Ashing without HF, and uptake in HCl	AD
Dry Ashing without HF, and uptake in HNO_3	AE
Dry Ashing without HF, and uptake in H_2SO_4	AF
Extraction with acid(s)	BA
Extraction with water	BB
Finely-divided dry sample	CA
Microwave digestion - closed system with HF, and final medium H_2SO_4	DA
Microwave digestion - closed system with HF, and final medium HNO_3 and/or HCl	DB
Microwave digestion - closed system with HF, and final medium $HClO_4$	DC
Microwave digestion - closed system without HF, and final medium H_2SO_4	DD
Microwave digestion - closed system without HF, and final medium HNO_3 and/or HCl	DE
Microwave digestion - closed system without HF, and final medium HClO4	DF
Microwave digestion - open system with HF, and final medium H_2SO_4	DG
Microwave digestion - open system with HF, and final medium HNO_3 and/or HCl	DH
Microwave digestion in open system with HF, and final medium $HClO_4$	DI
Microwave digestion - open system with HF, and final medium HNO_3 / peroxide	DJ
Microwave digestion - open system without HF, and final medium H_2SO_4	DK
Microwave digestion - open system without HF, and final medium HNO_3 and /or HCl	DL
Microwave digestion - open system without HF, and final medium $HClO_4$	DM
Microwave digestion - open system without HF, and final medium HNO_3 / peroxide	DN
Pellet (fused)	EA
Pellet (pressed powder)	EB
Schoeniger combustion with Pt and O_2 , with uptake in HCl	FA
Schoeniger combustion with Pt and O_2 , with uptake in HNO_3	FB
Wet digestion - open system with HF, and final medium H_2SO_4	GA
Wet digestion - open system with HF, and final medium HNO_3 and /or HCl	GB
Wet digestion - open system with HF, and final medium $HClO_4$	GC
Wet digestion - open system with HF, and final medium HNO_3 / peroxide	GD
Wet digestion - open system without HF, and final medium H_2SO_4 (includes Kjeldahl – not quantitative for NO_3)	GE
Wet digestion - open system without HF, and final medium H_2SO_4 (includes Kjeldahl – quantitative for NO_3)	GF
Wet digestion - open system without HF, and final medium HNO_3 and /or HCl	GG
Wet digestion - open system without HF, and final medium $HClO_4$	GH
Wet digestion - open system without HF, and final medium HNO_3 / peroxide	GI
Wet digestion - open system without HF —diacid (HNO_3 , $HClO_4$)	GJ
Wet digestion - open system without HF — triacid (HNO_3 , H_2SO_4, $HClO_4$)	GK
Others	ZZ

Table 6. ASPAC Codes to allow the laboratory to record the instrumental and/or analytical finishes associated with each plant test/element reported in the Inter-laboratory Proficiency Program. A separate ASPAC Code (see Table 5) is required to identify the relevant preparation/extraction/digestion techniques.

Instrumental and/or analytical finish	ASPAC MIC Code
AAS-ETA: [Atomic Absorption Spectrophotometry Electro-Thermal Atomisation] background correction, without chemical modifier	01
AAS-ETA with deuterium background correction, without chemical modifier	02
AAS-ETA with Zeeman background correction, without chemical modifier	03
AAS-ETA with pulsed hollow cathode lamp background correction, without chemical modifier	04
AAS-ETA without background correction, with chemical modifier	05
AAS-ETA with deuterium background correction, with chemical modifier	06
AAS-ETA with Zeeman background correction, with chemical modifier	07
AAS-ETA with pulsed hollow cathode lamp background correction, with chemical modifier	08
AAS-Flame, without background correction, using air-acetylene	09
ASS – carbon rod –graphite furnace	10
AAS-Flame with deuterium background correction, using air-acetylene	11
AAS-Flame with Zeeman background correction, using air-acetylene	12
AAS-Flame with pulsed hollow cathode lamp background correction, using air-acetylene	13
AAS-Flame without background correction, using N_20-acetylene	14
AAS-Flame with deuterium background correction, using N_20-acetylene	15
AAS-Flame with Zeeman background correction, using N_20-acetylene	16
AAS-Flame with pulsed hollow cathode lamp background correction, using N_20-acetylene	17
Chromatography	18
Cold vapour technology	19
Flame emission	20
Gravimetric	21
Hydride technology and similar	22
ICP-AES	23
ICP-MS	24
Infrared — near-range (NIR)	25
Infrared — mid-range (MIR)	26
Ion selective electrode	27
Ion chromatography	28
Neutron activation analysis	29
Spectrophotometry (manual)	30
Spectrophotometry (auto; segmented flow, FIA, DA, etc)	31
Titrimetric	32
Turbidimetric / or Nephelometric	33
Voltammetry (direct)	34
Voltammetry (stripping)	35
X-ray fluorescence	36
Dumas (eg. Leco)	37
Others (specify)	38

Lab. Code #	Method Codes	Reported data on plant Aluminium (mg Al/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L005	GI-23	84.4		254		68.7	††	25																	
L009	GJ-23	75.2		160		8.76		35.5		119		144	†	14		219		11.7		535		560	†	51.9	
L011	GJ-23	77.4		219		6.15		34		151		188		9.31		271		8.01		774		682		61.7	
L013	DN-23	98	†	221		2		26		147		179		4		259		1		756		661		64	
L016	GJ-23	85		241		1.44		27.5		172		194		3.8		284		1.49		847		729		67.8	
L017	DE-23	86		231		4		38		167		207		7		295		8		785		694		55	
L019	AE-24	132	††	241		23.9	††	70.4	††	122		210		18.7		298		26.5	††	591		698		511	††
L022	DE-23	85.3		215		6		29.4		151		184		7.5		276		5.9		711		762		75	
L023	DE-23	94.6		241		3.61		29.3		172		182		0.585		301		3.09		862		725		66.4	
L024	AD-07									58.1	††	87	††	10		89.1	††	40.3	††	267		130	††	236	††
L026	GI-23	82.4		201		3.28		24.5		141		184		4.44		283		2.68		615		760		73.9	
L028	DE-23	95		284		12		34		157		197		12.5		375	††	12		824		732		77	
L030	GJ-23	75.1		195		2.15		22.5		121		137	†	3.9		203									
L032	GG-23	84		203		3.07		25.3		121		171		5.74		245		3.12		593		6.83	††	70.8	
L034	GG-23	82.4		197		5.64		26.3		137		194		4.27		268		2.51		558		913	††	75.3	
L036	DE-23	86.7		267		2.02		31.5		121		174		3.37		251		2.56		693		669		53.3	
L044	GG-23	77.5		234		13.7	††	49.2	††																
L046	GJ-23	83.6		229		6.4		29.5										32.7	††	825		729		82	
L079	GJ-23	87.4		219		6.6		40.1		149		177		1		280		0.7		745		700		55.7	
L097	DE-23	81.4		241		1.92		24.1		169		198		10.4		330		5.7		895		784		62.4	
L133	GG-23	44.1	††	136	††	1.12		13.5		165		200		20.8	†	295		7.08		338		387	††	46.9	
L135	DN-23	90		217		4.29		28.3		153		190		18		273		22	†	578		783		82	
L156	GI-23	103	†	228		11.3		36.6		160		200		35.6	††	318		50.4	††	579		752		115	††
L159	GG-23	72.3		179		1.43		21.3		88.9		128	††	2.56		173	††	0.88		328		704		64	

Lab. Code #	Method Codes	Reported data on plant Boron (mg B/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L005	GI-23	12.2	††	57.7	††	11.2	††	22.1		26	††	160		40.5	††	48	††	22	††	28.1	††	39.3	††	52.5	††
L009	DE-23	56.8	††	73.7	††	46.1	††	52.4	††	9.9		142		2.42		22.5		0.57		11.4		19.9		30.5	
L011	GJ-23	16.2	†	30.1		5.39	††	14.5		11.1		110	††	5.07	††	21.3		2.96		10.2		16.5		25.8	†
L013	DN-23	19.3		35		0.8		17.8		9.1		141		3.9	†	22.4		1.4		12.3		20.2		30.7	
L015	AD-23	23		39		1.19		19.7		9.85		149		1.37		23.6		3.5		15.9		24.7		37	
L016	GI-23	23.9		40.8		0.45		19.5		10.8		155		0.42		24.1		1.3		13.3		23.1		34	
L017	DE-23	20		34		1		17		10		158		0.03		24		10	††	12		21		32	
L018	GJ-23	24		39		0.79		20		10.3		152		0.93		25.7		1.54		13.5		22.6		35.7	
L019	AE-24	18.8		38.1		0.26		17.4		11.3		141		2.08		23.4		2.27		13.3		18.6		28.5	
L022	DE-23	21.2		36.2		0.45		18.6		9.9		149		0.88		23.3		1.7		14		23.8		35.1	
L023	DE-23	23.5		35.8				15.5		9.28		144		1.68		22.1		4.43	†	17.7		26.6		38	
L026	GI-23	23.5		40.6		0.76		20		11.1		152		1.48		23.4		2.41		17.3		26.9		34.1	
L028	DE-23	21.4		37.9		2.2	†	20.5		10.8		155		2.2		24.1		2.2		14.8		23.3		36	
L030	GJ-23	19.1		32.7		0.46		15.4		7.2	††	107	††	1.63		17.9	††								
L032	GG-23	23.8		39		2.13	†	19		10.9		143		1.82		22.6		4.28	†	15.1		26.4		33.9	
L034	GG-23	22.4		38.1		3.21	††	19		10		147		1.13		22.5		1.43		13.8		26		32.9	
L036	DE-23	21.1		36.3		0.42		19.5		10.1		147		1.35		23		0.98		14		21.7		35.2	
L046	GJ-23	26.6		43.2		3.36	††	22.3										7.86	††	17		27.5		36.8	
L064	GJ-30	20.4		24.1	††	5.66	††	18.9		4.19	††	94	††	2.14		20.6		1.3		12.1		30.5		56.6	††
L079	CA-37	7	††	23.8	††	0.1		5	††																
L080	GJ-30	14.3	††	21.4	††	6.8	††	14.8		12.1		36	††	5.9	††	21		6.7	††	27.5	††	20.5		23.2	†
L084	GJ-30	23		35.3		0.5		17.3		10		120	†	2		35	††								
L097	DE-23	21.3		37.5		0.001		19.5		11.2		157		1.2		24.6		1.02		13.9		22.7		34.4	
L133	GG-23	16.4	†	33.9		0.59		17.3		10.4		136		1.06		21.4		0.67		6.83	†	10.3	††	16.3	††
L135	DN-23	23.9		39		0.90		18.76		11		180	††	2.2		2.5	††	2		15		26		38	
L139	AD-23	23.8		40.9		0.94		21		10.1		149		2.14		23.3		1.51		14.7		23.6		33.1	
L156	GI-23	23.1		38.7		1.04		19.8		12.5	†	153		5.83	††	25.8		2.72		16.4		23.8		34.1	
L159	GG-23	23.4		42.5		0.97		21.4		5.7	††	100	††	0.42		13.7	††	1.07		10.7		18.5		28.8	

Lab. Code #	Method Codes	Reported data on plant Calcium (%Ca w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	AD-09	1.06	††	1.74		0.022	††	0.938	††	0.554		0.861		0.039		0.702		0.007		0.849		0.434		0.38	
L005	GI-23	0.676		1.18	††	0.004		0.481	†	0.54		0.94		0.029		0.7		0.001		0.862		0.416		0.364	
L007	AD-09	0.768		1.53		0.052	††	0.687		0.6		0.94		0.07	††	0.73		0.03	††	0.961	†	0.508	†	0.433	
L009	GJ-23	0.736		1.46		0.009		0.552		0.473		0.82		0.033		0.579		0.009		0.856		0.429		0.356	
L011	GJ-23	0.686		1.31		0.008		0.539		0.53		0.804		0.033		0.665		0.008		0.834		0.425		0.351	
L012	GE-11	1.09	††	1.55		0.042	††	0.743		0.508		0.771		0.027		0.604		0.019	††	0.902		0.567	††	0.47	††
L013	DN-23	0.807		1.51		0.005		0.66		0.569		0.863		0.018	††	0.67		0.003		0.894		0.455		0.395	
L015	GJ-23	0.847		1.52		0.013	†	0.656		0.559		0.87		0.036		0.692		0.006		0.905		0.462		0.412	
L016	GI-23	0.832		1.53		0.005		0.642		0.576		0.852		0.032		0.688		0.003		0.896		0.475		0.396	
L017	DE-23	0.78		1.45		0.0018	†	0.59		0.53		0.84		0.03		0.66		0.01		0.9		0.43		0.38	
L018	GJ-23	0.85		1.59		0.01	†	0.68		0.573		0.888		0.034		0.793	†	0.002		0.882		0.479		0.414	
L019	AE-23	0.798		1.47		0.005		0.616		0.53		0.872		0.023		0.685		0.01		0.8	†	0.411		0.378	
L022	DE-23	0.83		1.45		0.005		0.643		0.549		0.848		0.032		0.671		0.003		0.91		0.437		0.403	
L023	DE-23	0.89		1.63		0.005		0.663		0.604		0.927		0.0306		0.729		0.004		0.959	†	0.446		0.383	
L024	AD-09	0.77		1.54		0.0022		0.010	††									0.0148	††	0.525	††	0.126	††	0.12	††
L026	GI-23	0.819		1.49		0.006		0.628		0.545		0.836		0.032		0.663		0.003		0.884		0.44		0.365	
L028	DE-23	0.815		1.54		0.01	†	0.714		0.561		0.865		0.033		0.684		0.01		0.901		0.435		0.399	
L030	GJ-23	0.773		1.36		0.005		0.555		0.431	††	0.652	††	0.024		0.534	†								
L032	GG-23	0.767		1.41		0.008		0.59		0.505		0.775		0.031		0.6		0.005		0.874		0.443		0.381	
L034	GG-23	0.917		1.61		0.01	†	0.728		0.591		0.924		0.033		0.717		0.004		0.948		0.498	†	0.414	
L035	AB-11	0.699		1.12	††	0.003		0.525		0.51		0.786		0.028		0.599		0.003		0.901		0.424		0.36	
L036	DE-23	0.772		1.42		0.005		0.652		0.503		0.845		0.028		0.653		0.004		0.91		0.418		0.391	
L042	GF-14	0.91		1.66		0.02	††	0.721		0.591		0.91		0.039		0.708									
L044	GG-23	0.744		1.67		0.076	††	0.667		0.63		0.953		0.039		0.748		0.008		0.982	††	0.525	††	0.435	
L046	GJ-23	0.826		1.58		0.006		0.607										0.005		0.852		0.433		0.373	
L064	GJ-11	0.951		1.66		0.025	††	0.546		0.489		0.911		0.057	††	0.399	††	0.003		0.875		0.272	††	0.247	††
L079	GJ-23	0.788		1.52		0.005		0.65		0.558		0.815		0.032		0.67		0.003		0.878		0.495	†	0.404	
L080	GJ-13	0.909		1.77	†	0.002		0.386	††	0.442	†	0.913		0.006	††	0.242	††	0.01		0.742	††	0.239	††	0.245	††
L084	GJ-14	0.819		1.51		0.012	†	0.65		0.529		0.815		0.054	††	0.659									
L097	DE-23	0.84		1.48		0.004		0.636		0.568		0.863		0.037		0.676		0.009		0.933		0.468		0.392	
L133	GG-23	0.617	††	1.32		0.005		0.554		0.579		0.833		0.035		0.672		0.002		0.475	††	0.226	††	0.198	††
L135	DN-23	0.869		1.54		0.005		0.643		0.626		1.03		0.038		0.79	†	0.004		1.00	††	0.522	††	0.453	†
L139	AD-23	0.926		1.59		0.006		0.245	††	0.58		0.912		0.035		0.71		0.001		0.91		0.448		0.365	
L156	GI-23	0.804		1.5		0.008		0.64		0.52		0.8		0.03		0.62		0.017	††	0.855		0.436		0.376	
L157	GG-23									0.666	†	0.563	††	0.029		0.513	††								
L159	GG-23	0.084	††	1.58		0.004		0.654		0.513		0.814		0.063	††	0.612		0.0031		0.882		0.432			

Lab. Code #	Method Codes	Reported data on plant Cadmium (mg Cd/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L009	GJ-23	0.036		0.047		0.018		0.163		0.036		0.0473	††	0.014	†	0.054		0.008		0.064		0.016		0.108	
L011	DE-23	0.080	††	0.075		0.056	††	0.23	†	0.074	††	0.079	††	0.089	††	0.086	†	0.005		0.008		0.001		0.099	
L016	GJ-24	0.012		0.045		0.016		0.166		0.028		0.028		0.0024		0.054		0.005		0.080		0.004		0.139	
L019	AE-24	0.011		0.02		0.004		0.053	††	0.015	†	0.029		0.006		0.052		0.004		0.045		0.11	††	0.069	
L022	DE-24	0.03		0.04		0.002		0.17		0.029		0.03		0.002		0.04	†	0.003		0.055		0.01		0.111	
L023	DE-24	0.033		0.040		0.005		0.168		0.027		0.043	†	0.003		0.052		0.0023		0.064		0.011		0.117	
L024	AD-03									0.112	††	0.122	††	0.051	††	0.165	††	0.013		0.075		0.21	††	0.069	
L028	DE-24	0.042		0.121	††	0.007		0.249	††	0.027		0.034		0.007		0.05		0.007		0.064		0.007		0.116	
L030	DE-24	0.03		0.04		0.002		0.137	†	0.03		0.033		0.006		0.063	†								
L032	GG-24	0.025		0.032		0.005		0.162		0.025		0.028		0.003		0.052									
L036	DE-23	0.036		0.049		0.019		0.185		0	††	0.031		0.026	††	0.064	†	0.037	††	0.085		0.017		0.126	
L046	GJ-23																	0.009		0.081		0.028		0.099	
L079	GJ-23	0.042		0.014		0.023	†	0.227	†									0.001		0.04		0.001		0.09	
L133	GG-01	0.027		0.0326		0.009		0.139		0.007	††	0.005	††	0.001		0.013	††	0.001		0.012		0.001		0.029	
L159	GG-23	0.033		0.042		0.004		0.174		0.025		0.025		0.003		0.044		0.0017		0.056		0.009		0.1	

Lab. Code #	Method Codes	Reported data on plant Carbon (%C w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L009	CA-37	48.7		40.6		38.5		36.7		39.8	††	41.7	††	38.2		39.1		39.6		39.7		45.4	††	38.4	
L011	CA-21	56.6		54	††	58.6	††	54.7	††	49.6	††	49.5	††	51.2	††	46.1		52.2	††	48.6		49.6		48.3	††
L013	CA-37	52.7		45.4		44.3		41.3		45.9		47.7		44.5		44.1		46.2		46.0		51.4		43.5	
L015	CA-37	52.2		44.3		43.4		40.5		44.3		46.1		43.3		42.8		43.8		43.6		48.9		41.2	
L018	CA-37									44.8		47.8		44.6		47.2		45.7		45		49.8		44.1	
L019	CA-37	50.6		42.3		39.7		38		41		43.7		40.3		40.7		41.3		41.5		47.6		40.3	
L022	CA-37	54.1		42.6		41.8		39.4		43.1		45.5		41.9		44.1		42.6		42.2		46.8	†	41.3	
L023	CA-37	51.8		44		42.6		40		43.8		45.7		42.4		42.6		42.7		42.8		48.1		40.6	
L028	CA-37	49.7		43.2		41.1		41.6		44.3		43.9		40.9		41.4									
L032	CA-37	49		41.6		38.9		37.5		42		44		40		41		41		41		46.5	†	39.7	
L036	CA-37	50.1		42.3		44.2		41.8		43.3		45.5		41.6		42.6		43.8		43.3		49		41.2	
L042	CA-37	52.9		44.4		42.5		40.2		44.6		46.4		43.8		43		44.1		44		49.4		41.2	
L045	CA-37	52.2		44.8		43.8		41.1																	
L046	CA-37	51.5		42.4		39.8		37.9										40.9		41.2		47.6		39.6	
L079	CA-37	51.5		43.2		42.1		39.7		44.5		46.5		43.5		43.9		43.9		45		49.4		42.4	
L097	CA-37	49.5		40.6		39.3		38.5		43.6		46.5		43.5		43.4		44.2		43.5		49.4		41.3	
L156	CA-37	54		44.8		44.3		41.1		43.8		45.2		43.3		42.8		44.1		43.7		49.6		41.6	

Lab. Code #	Method Codes	Reported data on plant Chloride (%Cl w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L005	GE-31	0.32		0.76		0.02		0.31																	
L009	BB-32	0.412	††	1.11	††	0.164	††	0.198	††	0.9	††	0.326	†	0.169		0.365		0.096	††	0.997	†	0.244	††	0.781	
L011	BB-32	0.428	††	1.32	††	0.136	††	0.447	††	0.734		0.401	††	0.096		0.412		0.026		0.896		0.096	††	0.778	
L013	CA-27	0.29		0.86		0.05		0.3		0.74		0.24		0.13		0.37		0.06		0.85		0.06		0.76	
L016	BA-23	0.275		0.828		0.042		0.296		0.734		0.262		0.113		0.357		0.0461		0.838		0.053		0.716	
L018	BA-32	0.33		1		0.06		0.35		0.77		0.246		0.132		0.422		0.06		0.864		0.063		0.802	
L019	AE-24									0.956	††	0.382	††	0.192	††	0.467	††	0.3	††	1.25	††	0.05		1.25	††
L022	BB-31	0.293		0.838		0.033		0.301		0.75		0.25		0.116		0.361		0.052		0.78		0.058		0.73	
L023	BB-31	0.295		0.924		0.034		0.304		0.806		0.181		0.11		0.426		0.049		0.855		0.024	††	0.699	
L026	BB-31	0.285		0.839		0.046		0.287		0.704		0.237		0.121		0.384		0.062		0.747		0.078	†	0.665	
L028	BB-31	0.32		0.94		0.02		0.27		0.75		0.28		0.09		0.39		0.04		0.88		0.04		0.76	
L030	BB-31	0.267		0.767		0.038		0.27		0.694		0.23		0.102		0.366									
L034	BA-32	0.276		0.869		0.036		0.288		0.718		0.242		0.112		0.373		0.056		0.828		0.056		0.738	
L035	AB-11																	0.135	††	0.184	††	0.406	††	0.209	††
L036	EB-36	0.341		0.895		0.034		0.264		0.788		0.306		0.122		0.351		0.052		0.889		0.057		0.636	
L064	BB-27	0.31		0.922		0.078	†	0.361		0.791		0.307		0.165		0.494	††	0.062		0.866		0.144	††	1.21	††
L097	BA-32	0.266		0.811		0.03		0.269		0.73		0.238		0.115		0.365		0.051		0.837		0.054		0.718	
L100	BA-32	0.242		0.764		0.037		0.259		0.727		0.25		0.131		0.369		0.055		0.839		0.064		0.744	
L133	BB-28									0.0003	††	0.011	††	0.005	††	0.017	††	0.023	††	0.43	††	0.032	†	0.399	††
L135	BB-32	0.35		1.01		0.07		0.31		0.67		0.18		0.1		0.31	†	0.06		0.74		0.05		0.7	
L139	BB-31	0.3		0.868		0.029		0.284		0.706		0.348	†	0.098		0.384		0.043		0.787		0.24	††	0.697	
L159	BB-32	0.276		0.816		0.048		0.252		0.76		0.24		0.11		0.44	††	0.051		0.842		0.049		0.73	

Lab. Code #	Method Codes	Reported data on plant Cobalt (Co mg/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L009	GJ-23	0.083		0.222		0.023		0.032		0.070		0.148		0.018		0.622	††	0.006		0.263		0.182		0.026	
L011	GJ-23	0.156	†	0.174		0.098	††	0.11	††	0.109	††	0.135		0.086	††	0.155		0.071	††	0.239		0.175		0.094	††
L013	DN-23	0.12		0.26		0.08	††	0.06		0.078		0.174		0.008		0.19		0.01		0.35		0.2		0.02	
L016	GJ-24	0.13		0.29		0.107	††	0.054		0.073		0.187		0.007		0.19		0.009		0.429		0.26		0.061	
L017	DE-23	1	††	1	††	1	††	1	††	0.3	††	0.1		0.05	††	0.5	††	0.003		0.35		0.17		0.001	
L019	AE-24	0.075		0.164		0.023		0.043		0.087		0.225		0.016		0.231		0.021	†	0.312		0.229		0.081	†
L022	DE-24	0.11		0.255		0.021		0.042		0.073		0.176		0.01		0.165		0.011		0.31		0.23		0.035	
L023	DE-24	0.093		0.233		0.020		0.042		0.073		0.169		0.006		0.159		0.007		0.29		0.214		0.026	
L024	AD-03									0.036	††	0.088		0.006		8.63	††	0.301	††	0.315		0.025	††	0.216	††
L028	DE-24	0.108		0.271		0.02		0.048		0.08		0.195		0.004		0.182		0.004		0.348		0.246		0.037	
L030	DE-24	0.111		0.329		0.027		0.052		0.167	††	0.205		0.019		0.231									
L032	GG-24	0.084		0.182		0.046	†	0.042		0.124	††	0.227		0.025	†	0.206									
L034	GG-23	0.084		0.209		0.033		0.044		0.082		0.191		0.036	††	0.171		0.021	†	0.264		0.208		0.033	
L036	DE-23	0.097		0.276		0.023		0.046		0.002	††	0.126		0		0.05	††								
L046	GJ-23																	0.048	††	0.286		0.198		0.052	
L079	GJ-23	0.297	††	0.341		0.236	††	0.15	††	0.068		0.159		0.001		0.174		0.013		0.348		0.191		0.015	
L097	DE-24	0.094		0.227		0.013		0.037		0.069		0.178		0.009		0.18		0.007		0.31		0.227		0.024	
L133	GG-23									0.011	††	0.206		0.056	††	0.933	††	0.01		0.01	††	0.01	††	0.01	
L135	DN-23	0.101		0.259		0.023		0.036		0.068		0.208		0.01		0.2		0.01		0.402		0.262		0.01	
L139	AD-23	0.112		0.234		0.033		0.046		0.067		0.179		0.01		0.573	††	0.002		0.267		0.235		0.011	
L159	GG-23	0.106		0.231		0.008		0.026		0.06		0.156		0.012		0.154		0.008		0.292		0.193		0.014	

Lab. Code #	Method Codes	Reported data on plant Copper (mg Cu/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	AD-09	5.7		9.1		1.2	†	1.4	††	7.75		9.82		2.69	†	5.14		0.65		7.9		19.7		8.95	
L005	GI-23	5.3		8.31		15.3	††	2.33		7.77		8.7		3.53		3.34									
L007	AD-13	3.64	††	4.76	††	1.12	†	4.14	†	4.25	††	8.25		1	††	0.5	††	1.25		7.25		19.8		5.25	††
L009	GJ-23	5.2		8.17		3.3		2.81		8.8		9.55		4.74		4.61		2.7	††	8.46		19.9		9.88	
L011	GJ-23	4.58		8.19		2.29		2.39		8.58		10.6		3.64		3.96		1.09		6.35		19		8.91	
L013	DN-23	5.1		8.7		2.7		2.8		8.8		9.2		4		3.3		1		6.1		18.2		8.8	
L015	GJ-23	5.45		8.46		2.91		2.94		8.6		9.13		3.92		3.64		1.3		6.74		19.5		9.75	
L016	GI-23	5.47		9.01		2.69		2.83		9.22		9.87		4.01		3.84		1.26		6.69		19.6		10.1	
L017	DE-23	1	††	9		1	††	1	††	13	††	12	†	6	††	7	††	2		8		22		10	
L018	GJ-23	5.8		9.5		3.3		3.2		9.65		10.3		4.41		4.68		1.24		7.05		21.6		11.3	
L019	AE-24	17.5	††	15.9	††	6.45	††	13.4	††	9.065		11		4.18		7.17	††	2.81	††	13.9	††	27.6	††	30.7	††
L022	DE-23	5.55		8.7		3		2.85		8.81		9.5		3.97		3.85		1.3		7.05		20.4		9.92	
L023	DE-23	5.54		9.13		2.71		2.74		9.56		9.84		3.94		3.82		0.978		7.47		20.4		10.1	
L024	AD-09									0.657	††	0.74	††	2.15	††	1.48	††	1.55		0.598	††	0.94	††	4.05	††
L026	GI-23	5.4		8.72		2.69		2.68		8.72		9.2		3.95		3.76		1.05		6.49		19.9		9.44	
L028	DE-23	5.8		9.6		3		3.3		9.4		10.8		4.2		3.9		0.9		8.3		21.6		12.2	†
L030	GJ-23	4.85		7.45	†	2.22		2.24		6.18	††	6.38	††	2.82		2.74									
L032	GG-23	6		9.02		2.93		2.99		8.52		9.24		3.76		3.79		1.31		7.51		20.5		10.2	
L034	GG-23	5.7		8.68		3.82		2.97		8.41		9.51		3.94		3.67		0.944		6.34		19.8		9.24	
L036	DE-23	5.21		8.91		2.72		2.91		7.83		9.47		3.69		3.82		1.13		7.08		17.8		8.98	
L042	GI-09	4.7		7.9		2.1		2.2		8.3		8.3		8.6	††	8.9	††								
L044	GG-23	5.84		11.1	††	2.61		2.82		6.31	†	8.18		3.25		3.39		1.62		5.76		19.4		9.52	
L046	GJ-23	5.31		8.97		2.55		2.97										1.34		6.89		17.9		9.14	
L064	GJ-11	5.35		9.22		7.07	††	4.64	††	8.81		10.3		2.73	†	1.67	††	1.2		6.78		21.5		15.3	††
L079	GJ-23	5.72		9.5		2.76		3.21		9.13		9.51		4.21		4.85		1.22		7.08		22.2		10.9	
L080	GJ-13	3.71	††	5.1	††	3.2		3.11		9		12	†	5		6.5	††	9	††	18.3	††	27.6	††	16	††
L084	GJ-09	5.45		8.9		2.46		3.02		8.9		10		3.85		9.68	††								
L097	DE-23	4.32	†	7.77		2.24		2		9.35		10.2		4.32		4.22		1.49		8.29		22.1		10.6	
L133	GG-23	2.65	††	6.69	††	1.71		1.64	†	9.42		10.3		5.08		4.32		0.462		3.57	††	9.78	††	4.51	††
L135	DN-23	5.42		8.52		2.48		2.48		9.9		10.7		4.3		4.1		1.3		7		21		10	
L139	AD-23	6.19		8.8		0.33	††	3.06		4.47	††	9.22		0.62	††	3.75		0.835		5.18	†	19.8		5.65	††
L156	GI-23	7.37	††	10.5	†	3.16		3.89	†	8.61		9.91		2.89		2.8		2.05	†	7.34		22.6		10.1	
L157	GG-23									7.57		4.35	††	2.21	††	9.44	††								
L159	GG-23	4.89		7.82		2.4		2.36		7.41		7.88		3.36		2.95		0.954		6.16		17.2		8.21	

Lab. Code #	Method Codes	Reported data on plant Iron (mg Fe/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	AD-09	83.8		232	††	13.4	††	53.5	††	104		157		42.4	††	176		14.6		584		73.5		13.1	
L005	GI-23	63.6		179		50.7	††	31.3		79.9		144		13.6	††	143		5.38	††	599		78.3		17.3	
L007	AD-13	60.3		156		0.75		26.7		89.5		149		28.3		163		13.3		541		72.3		16.5	
L009	GJ-23	75.4		185		21.1	††	47.6	††	108		176		39	††	186		34.8	††	540		97.9	††	29	
L011	GJ-23	53.7		192		16.2	††	33.4		98.2		173		25.2		189		18		524		90.1	††	18.4	
L013	DN-23	72.7		181		2.8		34.7		88.6		146		21.1		158		13		495		72.9		15	
L015	GJ-23	68		190		8		37.6		101		175		32		182		19	†	532		91.5	††	23.5	
L016	GJ-23	68.2		204		3.36		35.2		103		179		26.3		189		14.7		536		77.7		18.6	
L017	DE-23	77		200		6		43		94		184		26		180		14		577		81		19	
L018	GJ-23	76		226		7.9		44		116		183		29.7		225		26.4	††	540		74.6		2.75	††
L019	AE-24	74.8		176		15.8	††	51.8	††	125		197	††	59	††	229		57.4	††	493		104	††	80.5	††
L022	DE-23	69		180		5.5		38.7		99		155		26		169		16		513		99	††	19	
L023	DE-23	73.9		195		4.03		33.7		104		161		25.6		182		13		524		74.2		16.8	
L024	AD-09									73.6		127		15.8	†	148		19.9	†	461		14	††	69.7	††
L026	GI-23	66.3		177		3.9		32.6		87.9		155		25.3		157		13.4		486		75		15.7	
L028	DE-23	67		183		3.6		34.1		103		155		26.4		222		14.6		513		75.6		16.1	
L030	GJ-23	84.8		196		4.59		46.5	†	86		149		22.5		153									
L032	GG-23	63.4		162		6.66		36.8		34.7	††	143		10.4	††	127		8.99	†	490		72.3		21.7	
L034	GG-23	63.1		157		4.02		33.4		80.8		146		25		145		13.8		444		68.2		15.7	
L035	AB-11	59.5		153		2.23		26.6		86.3		168		18.9		117		8.68	†	524		102	††	24.3	
L036	DE-23	63.1		203		4.46		35.3		79.6		150		23.8		164		14.3		497		73		15.2	
L042	GI-09	70		160		4		36		85		145		31		172									
L044	GG-23	58.1		224		7.46		40.5		77.5		156		29.8		192		4.59	††	417	††	74.7		22	
L046	GJ-23	72.7		195		14.8	††	35.4										21.5	†	501		74.9		22	
L064	GJ-11	66.7		181		5.65				114		173		51.2	††	324	††	13.9		523		83.7	†	38.8	††
L079	GJ-23	75.2		202		17.1	††	38.4		88.6		145		21.6		161		13.1		521		79.5		19.7	
L080	GJ-13	71.5		180		16.2	††	38.5		109		160		28		186		25	††	579		86.3	†	35.6	††
L084	GJ-09	63.1		172		1.9		35.9		86		156		24		175									
L097	DE-23	61.1		169		2.89		32.3		98.3		160		27.6		215		15.4		547		75.8		17.1	
L133	GG-23	36.3	††	128	††	3.02		25.7		86		152		25.3		167		6.5	†	258	††	35	††	8.11	
L135	DN-23	69.8		189		4.33		29.3		106		176		30		191		17		550		97	††	20	
L156	GI-23	72.5		180		3.68		34.8		97.8		147		19.2		150		17.4		439		73.8		22.3	
L157	GG-23									128		153		23.6		94	††								
L159	GG-23	64.2		181		2.76		32		71.5		130		24.2		123		13.6		391	††	59.8	††	13.1	

Lab. Code #	Method Codes	Reported data on plant Lead (mg Pb/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L009	GJ-23	0.247		0.319		0.111		0.203	†	0.207		0.317		0.085		0.201		0.156		0.397		0.342		0.161	
L011	DE-23	0.595	††	0.376		0.472	††	0.369	††	0.227		0.369		0.124		0.222		0.126		0.346		0.518		0.132	
L019	AE-24	0.153		0.209		0.03		0.028		0.07		0.214		0.034		0.113		0.106		0.414		0.414		0.402	††
L022	DE-24	0.23		0.175		0.025		0.073		0.096		0.22		0.029		0.16		0.03		0.42		0.325		0.065	
L023	DE-24	0.172		0.125		0.003		0.047		0.117		0.227		0.012		0.135		0.016		0.416		0.32		0.052	
L024	AD-07									0.748	††	0.498		0.339	††	0.607	††	0.32		0.064		0.065		0.108	
L028	DN-24	0.31		0.31		0.31	††	0.31	††	0.31		0.31		0.31	††	0.31	†	0.31		0.31		0.31		0.31	
L030	DE-24	0.18		0.111		0.0001		0.027		0.099		0.266		0.01		0.146									
L032	GG-24	0.185		0.142		0.06		0.086		0.032		0.175		0.0004		0.051									
L046	GJ-23																	0.191		0.423		0.403		0.171	
L079	GJ-23	0.09		0.01		0.03		0.01		0.001		0.081		0.005		0.001		0.01		0.16		0.15		0.01	
L133	GG-01	0.02								0.143		0.431		0.191	††	0.165		0.01		0.133		0.054		0.008	
L159	GG-23	0.267		0.072		0.006		0.038		0.099		0.255		0.032		0.124		0.018		0.355		0.32		0.075	

Lab. Code #	Method Codes	Reported data on plant Magnesium (%Mg w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	AD-09	0.164		0.248		0.023		0.16	††	0.167		0.243		0.08		0.161		0.078		0.141		0.252		0.138	
L005	GI-23	0.18	††	0.272	††	0.023		0.154	††	0.189		0.383	††	0.098		0.17		0.094	††	0.156		0.31	††	0.15	
L007	AD-13	0.143		0.204		0.049	††	0.127		0.2		0.29		0.11		0.19		0.09		0.151		0.244		0.146	
L009	GJ-23	0.131		0.192		0.018		0.107		0.157		0.216		0.080		0.139		0.079		0.132		0.209		0.125	
L011	GJ-23	0.131		0.217		0.019		0.114		0.164		0.241		0.0638	††	0.145		0.076		0.133		0.222		0.123	
L012	GE-11	0.16		0.243		0.022		0.14		0.192		0.268		0.09		0.164		0.076		0.141		0.246		0.14	
L013	DN-23	0.136		0.22		0.021		0.119		0.186		0.261		0.089		0.155		0.069		0.126		0.21		0.119	
L015	GJ-23	0.155		0.243		0.025		0.129		0.199		0.285		0.099		0.173		0.088		0.147		0.245		0.145	
L016	GI-23	0.144		0.225		0.021		0.121		0.19		0.262		0.089		0.163		0.082		0.133		0.234		0.131	
L017	DE-23	0.14		0.22		0.02		0.12		0.18		0.26		0.08		0.16		0.08		0.14		0.23		0.13	
L018	GJ-23	0.15		0.24		0.02		0.13		0.197		0.289		0.094		0.195	††	0.082		0.143		0.245		0.145	
L019	AE-23	0.145		0.223		0.021		0.119		0.181		0.28		0.083		0.169		0.077		0.126		0.198		0.15	
L022	DE-23	0.143		0.214		0.02		0.122		0.184		0.262		0.085		0.163		0.083		0.14		0.241		0.137	
L023	DE-23	0.145		0.22		0.021		0.119		0.19		0.262		0.087		0.163		0.076		0.135		0.228		0.131	
L024	AD-09	0.181	††	0.885	††	0.015	†	0.108										0.065	††	0.124		0.108	††	0.94	††
L026	GI-23	0.146		0.226		0.021		0.12		0.187		0.268		0.09		0.162		0.08		0.138		0.233		0.125	
L028	DE-23	0.147		0.235		0.023		0.137		0.197		0.279		0.093		0.172		0.088		0.142		0.227		0.137	
L030	GJ-23	0.124		0.191		0.018		0.097		0.146	††	0.205		0.07		0.129	††								
L032	GG-23	0.138		0.21		0.0202		0.112		0.168		0.243		0.080		0.143		0.078		0.131		0.222		0.128	
L034	GG-23	0.157		0.236		0.024		0.134		0.192		0.277		0.093		0.166		0.082		0.139		0.234		0.134	
L035	AB-11	0.121		0.191		0.018		0.111		0.153		0.235		0.078		0.137		0.077		0.132		0.226		0.12	
L036	DE-23	0.138		0.216		0.021		0.124		0.172		0.258		0.083		0.152		0.082		0.143		0.218		0.134	
L042	GF-09	0.148		0.232		0.017		0.123		0.213		0.295		0.118	††	0.192									
L044	GG-23	0.119	†	0.237		0.018		0.116		0.205		0.292		0.1		0.178		0.095	††	0.146		0.261		0.14	
L046	GJ-23	0.133		0.21		0.019		0.108										0.078		0.132		0.219		0.125	
L064	GJ-11	0.151		0.242		0.02		0.137		0.189		0.281		0.085		0.171		0.076		0.134		0.21		0.136	
L079	GJ-23	0.141		0.226		0.021		0.125		0.196		0.268		0.092		0.169		0.081		0.14		0.255		0.145	
L080	GJ-13	0.151		0.24		0.034	††	0.131		0.231	††	0.421	††	0.096		0.243	††	0.094	††	0.185	††	0.279	†	0.191	††
L084	GJ-14	0.144		0.216		0.012	††	0.116		0.176		0.259		0.09		0.163									
L097	DE-23	0.139		0.215		0.019		0.117		0.188		0.263		0.923	††	0.161		0.088		0.141		0.234		0.132	
L133	GG-23	0.107	††	0.198		0.018		0.104		0.184		0.245		0.089		0.155		0.038	††	0.070	††	0.113	††	0.066	††
L135	DN-23	0.157		0.229		0.021		0.122		0.219		0.323		0.105		0.188		0.073		0.129		0.228		0.126	
L139	AD-23	0.159		0.236		0.024		0.141		0.187		0.273		0.095		0.17		0.08		0.138		0.237		0.132	
L156	GI-23	0.149		0.239		0.021		0.129		0.18		0.25		0.08		0.15		0.085		0.138		0.222		0.131	
L157	GG-23									0.198		0.131	††	0.074		0.166									
L159	GG-23	0.143		0.222		0.02		0.12		0.166		0.24		0.087		0.139		0.081		0.128		0.212		0.124	

Lab. Code #	Method Codes	Reported data on plant Manganese (mg Mn/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	AD-09	492	††	43.5		7.75		26.9		59.7		231		9.49		42.6		3.65		81.2		290		13.1	
L005	GI-23	740		41.3		8.74		22.3		62.6		278		9.81		38.2		4.03		91.2	†	352	†	15.2	
L007	Not Spec									67.5		256		12		50.5	††	5		91.8	†	315		19.5	†
L009	GJ-23	629		38.9		9.66		23.4		51.7		203		8.97		36.8		4.07		81.7		297		14	
L011	GJ-23	624		42.3		8.83		23.2		62.4		237		9.77		41		4.33		81.7		301		13	
L013	DN-23	651		41.7		8.6		23.9		59.7		226		8.4		35.8		2.6		80.4		279		12.9	
L015	GJ-23	683		45.4		10.6		24.8		61.5		252		10.7		39.8		4.2		83.2		301		15.4	
L016	GI-23	710		45.6		10.2		26.5		64.6		250		10.4		42.4		3.84		85.4		318		14.9	
L017	DE-23	689		43		10		25		60		240		9		37		4		83		316		13	
L018	GJ-23	767		47		11		28		67.9		270		11.8		47.8		4.35		91.2	†	340		16.4	
L019	AE-24	487	††	37.3		8.07		23.3		57.8		256		11.1		41.7		4.99		81.5		318		22.2	††
L022	DE-23	694		41.6		9.5		25.3		59.8		243		9.8		39.5		3.9		86.3		309		15	
L023	DE-23	704		42.2		9.76		24.5		61.5		240		9.93		39.8		3.52		84.3		306		14.3	
L024	AD-09	684		42.1		8.48		22.4		51.8		203		7.67		33.4		3.52		73.3	††	11.6	††	269	††
L026	GI-23	670		43		9.93		25		59.4		235		10.4		37.7		4.01		82.7		296		13.9	
L028	DE-23	684		43		9.46		26.8		63.1		249		9.82		41.6		4.31		83.4		294		14	
L030	GJ-23	663		49.6		8.78		24.5		49.5	††	194	††	5.3	††	32.5									
L032	GG-23	708		43.2		9.52		24.4		57.5		232		9.46		36.6		3.78		85.2		303		14.5	
L034	GG-23	693		41.7		10.5		25.5		58.4		230		9.73		36.9		3.77		78.6		276		13.5	
L035	AB-11	616		37.3		6.64	††	19.9	††	54.5		242		6.25	††	26	††	2.18	††	82.7		293		15.1	
L036	DE-23	660		41.9		9.82		25.9		57.4		229		9.35		36.8		3.54		84.5		272		13.7	
L042	GI-09	761		46		10		26.5		60		252		13	††	42									
L044	GG-23	512	††	46.1		7.83		24.6		49.2	††	235		8.77		33.8		4.7		87.5		340		15.9	
L046	GJ-23	708		45.1		9.45		24										3.31		81.9		290		12.8	
L064	GJ-11	719		37.4		4.23	††	25.4		65.7		285	††	8.9		41.3		3.8		83.4		300		20.9	††
L079	GJ-23	749		47.9		10.8		27.6		60.6		236		9.8		38.3		3.9		93.5	††	359	††	17.1	
L080	GJ-13	727		44.5		9.5		24.25		58		243		10		41		5.3		93.3	††	328		18.6	†
L084	GJ-09	643		41.7		9.4		24.8		56		220		10.2		37.3									
L097	DE-23	704		40.3		8.67		26		63.5		245		11.5		41.6		4.53		85.7		307		13.8	
L133	GG-23	0.518	††	34.4		8		20.3	†	60.8		220		9.83		36.4		1.67	††	40.9	††	142	††	6.67	††
L135	DN-23	691		42.8		9.07		24.4		65		257		10		43		3		87		325		15	
L139	AD-23	775		45.1		12.4	††	29.7	††	58.2		248		11.7		40.4		3.96		77.4		297		13.5	
L156	GI-23	707		45.7		10.2		26.6		61		236		10		39.5		17.7	††	91.2	†	294		27.1	††
L157	GG-23									190	††	32.6	††	8.3		54	††								
L159	GG-23	646		39.6		8.87		22.5		51.5		204		8.92		32.7		3.14		71.5	††	267		11.8	

Lab. Code #	Method Codes	Reported data on plant Molybdenum (mg Mo/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L009	GJ-23	1.3	††	2.11	††	1.4	††	1.92	††	0.611	††	1.17	††	0.836	††	1.02	††	0.552	††	0.833	††	0.311	††	0.377	††
L011	GJ-23	0.226	†	0.403		0.816		0.4		0.234		0.693		0.188		0.694		0.179		0.232		0.088	†	0.020	
L013	DN-23	0.02		0.33		0.82		0.31		0.178		0.69		0.172		0.618		0.11		0.17		0.01		0.02	
L016	GJ-24	0.078		0.409		0.796		0.353		0.212		0.736		0.192		0.736		0.146		0.28	†	0.082	†	0.053	
L017	DE-23	10.8	††	10.8	††	10.8	††	10.8	††	0.1	†	1	††	0.1		1	††	0.074		0.082	†	0.01		0.025	
L019	AE-24	0.094		0.997	††	0.715		0.325		0.269		0.854		0.232		0.776		0.224		0.376	††	0.222	††	0.091	†
L022	DE-24	0.05		0.405		0.835		0.365		0.225		0.715		0.2		0.66		0.142		0.21		0.03		0.05	
L023	DE-24	0.028		0.327		0.729		0.296		0.205		0.699		0.163		0.647		0.108		0.18		0.004		0.022	
L024	GG-03	0.208	†	0.098	†	0.198	††	2.77	††									0.528	††	0.621	††	0.193	††	0.303	††
L028	DE-24	0.17	†	0.41		0.89		0.38		0.17		0.73		0.17		0.69		0.17		0.17		0.17	††	0.17	††
L030	DE-24	0.022		0.49		0.784		0.329		0.467	††	0.752		0.223		0.726									
L032	GG-24	0.038		0.358		0.767		0.338		0.221		0.746		0.178		0.66									
L034	GG-23	0.198	†	0.373		0.991		0.341		0.286		0.755		0.337	†	0.756		0.258		0.175		0.052		0.028	
L036	DE-23	0.161	†	0.601	†	0.949		0.426	†	0.567	††	0.865		0.295		0.696									
L046	GJ-23																	0.636	††	0.311	†	0.087	†	0.044	
L079	GJ-23	0.001		0.301		0.902		0.35		0.233		0.748		0.221		0.672		0.21		0.19		0.01		0.04	
L097	DE-24	0.032		0.369		0.736		0.33		0.228		0.768		0.207		0.686		0.13		0.195		0.029		0.028	
L133	GG-23	0.768	††	0.619	†	0.852		0.571	††	0.596	††	0.936		0.436	††	0.906	††	0.019		0.152		0.01		0.01	
L135	DN-23	0.025		0.399		0.987		0.349		0.226		0.838		0.209		0.751		0.078		0.19		0.008		0.007	
L139	AD-23	0.025		0.307		0.471	††	0.287		0.154		0.658		0.116		0.607		0.083		0.115	†	0.01		0.01	
L159	GG-23	0.022		0.402		0.789		0.337		0.201		0.67		0.375	††	0.584		0.136		0.183		0.032		0.026	

Lab. Code #	Method Codes	Reported data on plant Nitrogen (%N w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	GE-32									2.22	††	2.77	††	1.84	††	4.37	†	1.53	††	0.96	††	3.99		1.51	
L005	GE-31	2.39		2.7		1.18		1.73																	
L007	GE-38	2.47		2.87		1.23		1.8		1.75		2.19		1.37		4.58		1.2		1.67		3.63		1.34	
L009	CA-37	2.38		2.79		1.17		1.83		1.58		2.02		1.18		4.61		1.2		1.79		3.69		1.4	
L011	CA-37	2.4		2.84		1.16		1.84		1.56		2.03		1.19		4.77		1.28		1.87		3.78		1.47	
L012	GE-30	3.35	††	4.5	††	1.52	††	2.35	††	1.37		1.75	††	1.2		3	††	1.3		1.72		3.01	††	1.39	
L013	CA-37	2.61		3.08		1.35		2.05		1.76		2.27		1.35		4.96		1.47	†	2.03		4.17		1.62	
L015	CA-37	2.54		2.93		1.32		2.02		1.73		2.19		1.36		4.96		1.41		1.9		4.06		1.53	
L016	CA-37	2.46		2.84		1.3		1.9		1.69		2.05		1.3		4.84		1.31		1.81		3.55		1.38	
L017	GF-31																	1.26		1.74		3.42		1.4	
L018	CA-37									1.74		2.22		1.33		5.36	††	1.47	†	2		4.04		1.63	
L019	CA-37	5.01	††	2.92		1.17		3.8	††	1.62		2.11		1.2		4.78		1.38		1.94		4.08		1.61	
L022	CA-37	2.45		2.79		1.15		1.81		1.67		2.06		1.21		4.82		1.31		1.83		3.83		1.48	
L023	CA-37	2.63		3.09	†	1.43		2.1		1.9		2.31		1.49	†	4.9		1.45		1.94		3.78		1.62	
L024	GE-32	0.09	††	2.62		1.16		1.72		1.41		1.91		1.15		1.82	††	1.27		1.6		0.049	††	1.37	
L026	GE-31	2.45		2.83		1.19		1.83		1.54		2.03		1.24		4.69		1.28		1.8		3.89		1.44	
L028	GE-31	2.6		2.9		1.3		2		1.7		2.1		1.3		4.9									
L030	CA-37	23.5	††	27.2	††	11.6	††	17.8	††	1.58		1.99		1.2		4.81									
L032	CA-37	2.4		2.79		1.19		1.86		1.6		2.03		1.21		4.68		1.29		1.81		3.75		1.47	
L034	GE-31	2.39		2.76		1.17		1.75		1.51		2.01		1.2		4.62		1.35		1.76		3.72		1.45	
L035	AB-11	2.26		2.6	†	1.13		1.78		1.55		1.95		1.18		4.46		1.28		1.76		3.72		1.46	
L036	CA-37	2.44		2.83		1.39		2.13		1.57		2.15		1.22		4.83		1.52	††	2.01		4.12		1.65	
L042	CA-37	2.55		2.98		1.26		1.93		1.64		2.16		1.31		4.92		1.46		1.9		4.09		1.53	
L044	GE-32	1.46	††	3		1.13		1.73		1.5		2		1.28		4.63		1.3		1.7		3.5		1.33	
L045	CA-37	2.51		3.18	††	1.34		2.019										1.3		1.91		3.86		1.5	
L046	CA-37	2.44		2.91		1.21		1.87										1.32		1.765		3.76		1.467	
L064	GE-30	2.54		2.79		1.20		1.811		1.47		2.30		1.16		4.77		1.31		1.77		4.18		1.5	
L079	CA-37	2.5		2.82		1.25		1.95		1.69		2.18		1.34		5.09		1.35		1.88		3.77		1.6	
L084	GE-30	2.49		2.85		1.3		1.85		1.62		1.23	††	2.15	††	4.83									
L097	CA-37	2.49		2.87		1.31		1.99		1.73		2.16		1.46		4.92		1.49	†	1.96		3.96		1.55	
L100	CA-37	2.62		3.03		1.32		2.01		1.85		2.23		1.4		4.92		1.49	†	2.1		4.09		1.63	
L133	BB-38	0.0006	††	0.016	††	0.0001	††	0.079	††									0.0001	††	0.010	††	0.0005	††	0.0019	††
L135	CA-37	2.48		2.91		1.284		1.888		1.823		2.24		1.43		4.81		1.49	†	2.04		3.89		1.65	
L139	CA-37	2.57		3.01		1.21		1.95		1.76		2.26		1.35		5.25	†	1.33		1.84		3.83		1.5	
L156	CA-37	2.53		2.94		1.28		1.94		1.57		2.04		1.25		4.8		1.31		1.81		3.81		1.46	
L157	GF-31									1.98	†	4.55	††	1.23		1.52	††								
L159	GF-32	2.33		2.69		1.15		1.74		1.58		2.08		2.58	††	4.74		1.41		1.83		3.78		1.5	

Lab. Code #	Method Codes	Reported data on plant Phosphorus (%P w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	GE-30									0.227		0.211		0.285		0.693		0.22		0.233		0.343		0.185	
L005	GI-23	0.21	††	0.301	††	0.143	††	0.354	††	0.271		0.199		0.363		0.825		0.263	††	0.247		0.426	††	0.224	††
L007	GE-30	0.157		0.231		0.107		0.284		0.25		0.19		0.3		0.66		0.183		0.199		0.323		0.175	
L009	GJ-23	0.22	††	0.303	††	0.097		0.35	††	0.234		0.174		0.299		0.73		0.231		0.235		0.386		0.203	†
L011	GJ-23	0.126		0.213		0.090		0.249		0.234		0.172		0.288		0.673		0.203		0.2		0.324		0.17	†
L012	GE-30	0.149		0.207		0.088		0.25		0.215		0.167		0.272		0.649		0.186		0.246		0.316		0.158	††
L013	DN-23	0.144		0.227		0.106		0.279		0.246		0.175		0.329		0.688		0.213		0.213		0.339		0.185	
L015	GJ-23	0.179	††	0.279	††	0.121		0.324		0.284		0.218	†	0.366	†	0.82		0.243		0.254		0.405		0.23	††
L016	GI-23	0.146		0.226		0.099		0.276		0.255		0.185		0.323		0.739		0.214		0.211		0.348		0.188	
L017	DE-23	0.14		0.22		0.08		0.25		0.21		0.24	††	0.18	††	0.3	††	0.202		0.215		0.35		0.186	
L018	GJ-23	0.15		0.25		0.11		0.3		0.259		0.2		0.339		0.816		0.22		0.223		0.357		0.209	††
L019	AE-23	0.136		0.212		0.086		0.252		0.249		0.183		0.307		0.725		0.025	††	0.208		0.32		0.183	
L022	DE-23	0.148		0.219		0.096		0.273		0.242		0.181		0.305		0.682		0.214		0.218		0.354		0.198	
L023	DE-23	0.125		0.214		0.088		0.258		0.26		0.182		0.313		0.802		0.191		0.207		0.331		0.187	
L026	GI-23	0.154		0.24		0.098		0.282		0.251		0.19		0.322		0.721		0.213		0.225		0.357		0.19	
L028	DE-23	0.148		0.232		0.104		0.291		0.255		0.183		0.324		0.738		0.23		0.214		0.342		0.192	
L030	GJ-23	0.134		0.206		0.089		0.233		0.193	†	0.142	††	0.245	††	0.529	††								
L032	GG-23	0.142		0.213		0.091		0.25		0.213		0.166		0.285		0.628		0.203		0.201		0.332		0.183	
L034	GG-23	0.156		0.234		0.103		0.289		0.245		0.182		0.317		0.717		0.21		0.209		0.343		0.187	
L035	AB-11	0.184	††	0.246		0.117		0.262		0.107	††	0.424	††	0.68	††	0.911	††	0.568	††	0.648	††	0.776	††	0.639	††
L036	DE-23	0.138		0.222		0.102		0.284		0.218		0.17		0.292		0.66		0.211		0.216		0.311		0.188	
L042	GF-31	0.143		0.229		0.109		0.271		0.25		0.179		0.326		0.678									
L044	GG-23	0.13		0.241		0.078		0.261		0.236		0.182		0.306		0.722		0.226		0.199		0.364		0.19	
L046	GJ-23	0.137		0.217		0.092		0.248										0.208		0.203		0.343		0.183	
L064	GJ-30	0.124		0.203		0.092		0.296		0.218		0.161		0.301		0.718		0.204		0.204		0.315		0.222	††
L079	GJ-23	0.145		0.234		0.096		0.272		0.259		0.19		0.316		0.715		0.182		0.219		0.37		0.216	††
L080	GJ-30	0.145		0.23		0.096		0.263		0.21		0.157		0.251	†	0.626		0.198		0.202		0.307		0.174	†
L084	GJ-30	0.146		0.227		0.109		0.255		0.241		0.177		0.309		0.723									
L097	DE-23	0.142		0.222		0.094		0.268		0.249		0.185		0.328		0.709		0.224		0.216		0.35		0.189	
L133	GG-23	0.106	††	0.26		0.085		0.328		0.489	††	0.36	††	0.585	††	0.967	††	0.103	††	0.106	††	0.161	††	0.087	††
L135	DN-23	0.171	†	0.247		0.098		0.244		0.3	†	0.226	††	0.37	†	0.85	†	0.216		0.233		0.394		0.206	†
L139	AD-23	0.159		0.244		0.103		0.324		0.243		0.192		0.305		0.513	††	0.237		0.235		0.335		0.203	†
L156	GI-23	0.151		0.228		0.103		0.275		0.27		0.18		0.31		0.73		0.219		0.215		0.319		0.184	
L157	GF-31									0.22		0.7	††	0.327		0.26	††								
L159	GG-23	0.147		0.23		0.099		0.281		0.243		0.173		0.334		0.724		0.239		0.206		0.312		0.185	

Lab. Code #	Method Codes	Reported data on plant Potassium (%K w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	GE-09									1.32		1.65		0.3		4.21		0.357		1.88		2.04		3.26	††
L005	GI-23	0.716		2.07		0.098		2.94		1.81	††	2.45	††	0.45		4.71	††	0.283		2		2.17	†	2.92	
L007	GE-09	0.66		0.851	††	0.104		2.39		3.94	††	2.36	†	0.51		4.46	†	0.348		1.83		1.93		2.56	
L009	GJ-23	0.703		1.76		0.084		2.47		1.38		1.7		0.407		3.45		0.308		1.49		1.64		2.23	
L011	GJ-23	0.561		1.68		0.119		2.31		1.27		1.79		0.427		3.62		0.299		1.68		1.79		2.26	
L012	GE-11	0.599		1.88		0.116		2.88		1.42		1.62		0.529	†	2.47	††	0.222		1.36		1.42	††	1.9	††
L013	DN-23	0.522	†	1.7		0.077		2.52		1.35		1.75		0.394		3.7		0.224		1.496		1.62		2.31	
L015	GJ-23	0.664		1.91		0.107		2.69		1.54		2.02		0.424		3.8		0.264		1.72		1.87		2.68	
L016	GI-23	0.693		1.93		0.094		2.75		1.47		1.9		0.39		3.94		0.254		1.71		1.88		2.62	
L017	DE-23	0.63		1.79		0.09		2.61		1.4		1.88		0.37		3.73		0.25		1.68		1.83		2.53	
L018	GJ-23	0.67		1.99		0.11		2.93		1.54		2.04		0.433		4.27		0.283		1.8		1.99		2.89	
L019	AE-23	0.566		1.77		0.12		2.65		1.6		2.13		0.442		4.3		0.308		1.6		1.27	††	2.79	
L022	DE-23	0.681		1.85		0.093		2.79		1.48		1.91		0.397		3.78		0.268		1.73		1.89		2.69	
L023	DE-23	0.659		1.92		0.107		2.91		1.45		1.86		0.398		3.99		0.265		1.89		1.95		2.67	
L024	AD-09	0.697		1.75		0.081		2.52		0.192	††	0.247	††	0.052	††	0.489	††	0.217		1.57		2.35	††	1.71	††
L026	GI-23	0.651		1.9		0.1		2.75		1.47		2		0.416		3.9		0.274		1.7		1.94		2.49	
L028	DE-23	0.668		2.03		0.104		3.19		1.43		1.91		0.43		3.69		0.283		1.72		1.81		2.65	
L030	GJ-23	0.617		1.75		0.092		2.41		1.19		1.58		0.324		3.02	†								
L032	GG-23	0.663		1.85		0.089		2.59		1.34		1.79		0.355		3.45		0.245		1.65		1.85		2.59	
L034	GG-23	0.724		2		0.116		2.95		1.5		1.99		0.395		3.86		0.261		1.67		1.81		2.56	
L035	AB-11	0.425	††	1.42	††	0.082		2.14		1.28		1.71		0.375		3.23		0.28		1.61		1.91		2.41	
L036	DE-23	0.582		1.72		0.09		2.38		1.38		1.8		0.365		3.55		0.248		1.64		1.73		2.43	
L042	GF-09	0.68		1.83		0.11		2.85		1.53		1.9		0.465		3.75									
L044	GG-23	0.617		1.73		0.998	††	2.72		1.39		1.78		0.32		3.37		0.326		1.84		2.16	†	2.81	
L046	GJ-23	0.729		2.01		0.147	††	2.65										0.247		1.38		1.38	††	2.05	†
L064	GJ-11	0.825	††	1.27	††	0.077		1.848	††	1.49		1.64		0.501		2.04	††	0.294		0.167	††	1.82		2.26	
L079	GJ-23	0.613		1.85		0.092		2.66		1.42		1.84		0.385		3.67		0.27		1.76		2.02		2.69	
L080	GJ-13	0.64		0.179	††	0.034	††	2.04		1.81	††	2.03		1.01	††	2.56	††	0.553	††	2.72	††	2.52	††	3.83	††
L084	GE-20	0.72		1.88		0.13		2.74		1.4		0.47	††	1.84	††	3.66									
L097	DE-23	0.628		1.83		0.09		2.65		1.49		1.92		0.42		3.84		0.295		1.81		1.93		2.65	
L133	GG-23	0.514	†	1.68		0.103		2.42		1.31		1.62		0.193	††	3.61		0.138	††	0.899	††	0.967	††	1.39	††
L135	DN-23	0.66		1.824		0.097		2.59		1.49		2.01		0.414		3.9		0.259		1.72		1.95		2.68	
L139	AD-23	0.669		1.99		0.081		3.02		1.31		1.74		0.345		3.26		0.235		1.73		1.87		2.65	
L156	GI-23	0.674		1.87		0.143	†	2.69		1.46		1.82		0.37		3.67		0.334		1.69		1.8		2.48	
L157	GG-23									1.57		3.2	††	3.2	††	1.28	††								
L159	GG-23	0.591		1.76		0.075		0.12	††	1.29		1.72		0.344		3.77		0.201		1.48		1.6		2.29	

Lab. Code #	Method Codes	Reported data on plant Selenium (mg Se/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L009	GJ-23	0.795	††	0.247	††	0.086	††	0.009	††	0.667	††	0.542	††	0.057	††	0.174		1.87	††	1.75	††	2.32	††	2.51	††
L011	DE-23	0.379	††	0.006		0.001		0.157		0.439	††	0.294	††	0.005		0.255		0.155	††	0.21	††	0.405	††	0.2	
L013	GJ-22	0.03		0.03		0.04		0.13		0.169		0.014		0.013		0.18		0.05		0.01		0.07		0.01	
L016	GJ-24									0.206		0.021		0.018		0.19									
L019	AE-24	0.131		0.038		0.027		0.042	†	0.129		0.109	††	0.008		0.059	††	0.03		0.036		0.042		0.03	
L022	DE-24	0.05		0.05		0.03		0.16		0.16		0.03		0.01		0.17		0.046		0.03		0.075		0.13	
L023	DE-24	0.048		0.048		0.032		0.17		0.231		0.043		0.020		0.259		0.049		0.092		0.105		0.288	
L032	GG-24	0.045		0.034		0.036		0.128		0.179		0.027		0.019		0.196									
L046	GJ-23																	0.668	††	0.607	††	0.507	††	0.29	
L079	GJ-23	0.001		0.042		0.001		0.278	††									0.01	†	0.01		0.01		0.01	
L097	DE-24	0.028		0.023		0.037		0.126		0.194		0.023		0.013		0.193		0.041		0.015		0.082		0.029	
L133	GG-23	0.448	††	0.627	††	0.509	††	0.901	††	0.009	††	0.009		0.009		0.009	††	0.037		0.001		0.046		0.072	
L159	GG-23	0.524	††	0.16	††	0.018		0.153		0.242		0.158	††	0.015		0.363	††	0.045		0.22	††	0.41	††	0.074	

Lab. Code #	Method Codes	Reported data on plant Silicon (%Si w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L009	DE-23	0.022		0.037		0.002		0.005		0.192		0.081		0.012		0.018		0.003		0.183		0.006		0.003	
L011	ZZ-23	0.065		0.231		0.006		0.016		0.938		0.405		0.043		0.053		0.035	††	0.382		0.054		0.006	
L015	ZZ-23	0.048		0.219		0.011	†	0.02		1.02		0.442		0.025		0.054		0.008		0.853		0.02		0.007	
L019	AE-24	146	††	387	††	21.5	††	134	††	0.039		0.127		0.002		0.022		0.008		0.076		0.012		0.079	††
L036	EB-36	0.035		0.134		0.00		0.01		1.25		0.472		0.028		0.054		0.00		0.894		0.012		0.002	
L133	GG-23	0.009		0.019		0.00		0.00		0.083		0.124		0.226	††	0.002		0.002		0.003		0.002		0.001	
L159	GG-23	0.012		0.020		0.00		0.00																	

Lab. Code #	Method Codes	Reported data on plant Sodium (%Na w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	AD-09	0.227		0.135	†	0.01	††	0.089	††	0.13		0.021	††	0.016	†	0.079		0.001		0.102		0.003		0.567	
L005	GI-23	0.169	†	0.117		0.0039		0.051		0.131		0.003	†	0.006		0.070		0.003		0.098		0.006	†	0.581	
L007	AD-09	0.215		0.14	††	0.022	††	0.071		0.15		0.03	††	0.02	††	0.1	††	0.006	††	0.115	††	0.005	†	0.594	
L009	GJ-23	0.45	††	0.394	††	0.007	††	0.062		0.148		0.026	††	0.021	††	0.072		0.004	††	0.143	††	0.014	††	0.586	
L011	GJ-23	0.185		0.107	†	0.005	†	0.049		0.13		0.0083		0.006		0.065		0.001		0.093		0.001		0.508	†
L012	GE-11									0.109		0.012		0.012		0.054		0.019	††	0.106		0.018	††	0.575	
L013	DN-23	0.19		0.118		0.001		0.057		0.13		0.009		0.007		0.07		0.002		0.094		0.002		0.483	††
L015	GJ-23	0.212		0.118		0.006	††	0.057		0.138		0.015	†	0.013		0.071		0.001		0.095		0.002		0.595	
L016	GI-23	0.234		0.119		0.001		0.054		0.136		0.010		0.009		0.068		0.001		0.098		0.0012		0.585	
L017	DE-23	0.21		0.12		0.001		0.05		0.13		0.01		0.01		0.07		0.0001		0.092		0.001		0.552	
L018	GJ-23	0.22		0.12		0.001		0.06		0.142		0.011		0.011		0.08		0.002		0.099		0.003		0.641	†
L019	AE-23	0.096	††	0.08	††	0.005	†	0.062		0.04	††	0.013		0.003	†	0.037	††	0.003		0.066	††	0.036	††	0.346	††
L022	DE-23	0.205		0.114		0.002		0.054		0.129		0.01		0.009		0.065		0.001		0.097		0.003		0.576	
L023	DE-23	0.205		0.111		0.001		0.051		0.122		0.010		0.008		0.065		0.00		0.092		0.002		0.53	
L024	AD-09	0.021	††	0.012	††	0.001		0.005	††	0.117		0.013		0.010		0.065		0.006	††	0.1		0.25	††	0.005	††
L026	GI-23	0.217		0.115		0.001		0.053		0.132		0.01		0.008		0.066		0.001		0.094		0.002		0.557	
L028	DE-23	0.213		0.124		0.002		0.062		0.123		0.009		0.008		0.063		0.002		0.101		0.002		0.585	
L030	GJ-23	0.193		0.101	†	0.001		0.044		0.098	††	0.008		0.007		0.049									
L032	GG-23	0.222		0.118		0.005	†	0.054		0.125		0.010		0.0097		0.062		0.002		0.097		0.003		0.579	
L034	GG-23	0.226		0.119		0.002		0.058		0.13		0.01		0.008		0.065		0.00		0.09		0.003		0.554	
L035	AB-11	0.244		0.16	††	0.002		0.116	††	0.093	††	0.025	††	0.007		0.054		0.002		0.124	††	0.115	††	0.548	
L036	DE-23	0.199		0.116		0.001		0.055		0.127		0.011		0.008		0.065		0.001		0.104		0.003		0.576	
L042	GI-09	0.217		0.127	†	0.003		0.062		0.272	††	0.019	††	0.019	††	0.134	††								
L044	GG-23	0.107	††	0.091	††	0.018	††	0.035	††	0.09	††	0.013		0.009		0.097	††	0.01	††	0.084		0.009	††	0.592	
L046	GJ-23	0.21		0.117		0.002		0.056										0.002		0.094		0.003		0.568	
L064	GJ-11	0.185		0.094	††	0.002		0.062		0.114		0.018	†	0.014	†	0.033	††	0.002		0.104		0.001		0.55	
L079	GJ-23	0.213		0.119		0.001		0.059		0.134		0.01		0.008		0.067		0.001		0.096		0.002		0.626	
L080	GJ-13	0.141	††	0.088	††	0.011	††	0.046		0.136		0.02	††	0.016	†	0.077		0.015	††	0.109		0.018	††	0.616	
L084	GL-20	0.203		0.12		0.001		0.053		0.12		0.01		0.005		0.06									
L097	DE-23	0.196		0.106	†	0.001		0.049		0.13		0.01		0.009		0.065		0.001		0.097		0.002		0.59	
L133	GG-23	0.156	††	0.100	†	0.001		0.046		0.128		0.009		0.008		0.058		0.00		0.0455	††	0.002		0.277	††
L135	DN-23	0.217		0.116		0.002		0.053		0.145		0.023	††	0.021	††	0.078		0.0008		0.095		0.003		0.588	
L139	AD-23	0.229		0.125		0.002		0.055		0.118		0.02	††	0.01		0.06		0.001		0.1		0.01	††	0.563	
L156	GI-23	0.217		0.122		0.0025		0.059		0.14		0.01		0.01		0.07		0.003		0.094		0.004		0.544	
L157	GG-23									0.009	††	0.058	††	0.008		0.112	††								
L159	GG-23	0.208		0.12		0.001		0.046		0.105	†	0.007		0.007		0.05		0.00		0.086		0.003		0.492	††

Lab. Code #	Method Codes	Reported data on plant Sulfur (%S w/w)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L009	GJ-23	0.155		0.217		0.082		0.55		0.157		0.268		0.090		0.761		0.088		0.203		0.243		0.139	
L011	GJ-23	0.153		0.243		0.084		0.535		0.163		0.271		0.092		0.799		0.087		0.219		0.246		0.137	
L013	DN-23	0.162		0.238		0.093		0.612		0.17		0.281		0.106		0.829		0.093		0.21		0.243		0.138	
L015	GJ-23	0.18		0.262		0.097		0.638		0.179		0.313		0.111		0.882		0.104		0.233		0.272		0.161	
L016	GJ-23	0.176		0.26		0.093		0.611		0.175		0.284		0.102		0.827		0.096		0.223		0.26		0.148	
L017	DE-23																	0.09		0.23		0.27		0.15	
L018	GJ-23	0.18		0.27		0.1		0.67		0.182		0.318		0.113		0.996	†	0.101		0.234		0.274		0.164	
L019	CA-37	0.281	††	0.389	††	0.138	††	1.08	††	0.21		0.32		0.13	†	1.02	††	0.125	††	0.275	††	0.324	††	0.191	††
L022	DE-23	0.172		0.243		0.092		0.655		0.176		0.29		0.105		0.852		0.098		0.229		0.275		0.156	
L023	DE-23	0.196		0.279		0.097		0.661		0.192		0.338		0.112		0.967		0.099		0.23		0.274		0.162	
L026	GI-23	0.181		0.259		0.093		0.662		0.177		0.303		0.107		0.899		0.1		0.238		0.276		0.153	
L028	DE-23	0.164		0.242		0.091		0.639		0.177		0.296		0.104		0.887		0.11		0.226		0.262		0.153	
L030	GJ-23	0.163		0.23		0.084		0.546		0.138		0.232		0.082		0.656	††								
L032	GG-23	0.167		0.239		0.088		0.591		0.159		0.273		0.094		0.775		0.095		0.217		0.253		0.147	
L034	GG-23	0.182		0.258		0.1		0.652		0.17		0.292		0.103		0.827		0.096		0.219		0.255		0.147	
L036	DE-23	0.164		0.246		0.098		0.64		0.159		0.28		0.097		0.817		0.1		0.228		0.248		0.15	
L044	GG-23	0.123		0.273		0.071	†	0.539		0.139		0.312		0.078		0.804		0.137	††	0.279	††	0.381	††	0.131	
L045	CA-37	0.28	††	0.137	††	0.085		0.36	††																
L046	GJ-23	0.163		0.246		0.084		0.567										0.093		0.213		0.256		0.145	
L064	BA-30	0.166		0.228		0.09		0.47		0.189		0.341		0.097		0.856		0.097		0.225		0.245		0.161	
L079	GJ-23	0.154		0.238		0.083		0.597		0.186		0.309		0.101		0.856		0.099		0.249		0.296		0.176	†
L084	GJ-30	0.112	††	0.212		0.065	††	0.489		0.14		0.246		0.064	††	0.488	††								
L097	DE-23	0.168		0.243		0.089		0.641		0.179		0.299		0.11		0.874		0.1		0.234		0.274		0.151	
L133	GG-23	0.071	††	0.189		0.068	†	0.487		0.184		0.289		0.105		0.853		0.047	††	0.118	††	0.125	††	0.075	††
L135	DN-23	0.193		0.261		0.096		0.658		0.194		0.35		0.116		0.965		0.107		0.26	†	0.323	††	0.183	†
L139	CA-37	0.184		0.241		0.102		0.609		0.177		0.297		0.117		0.874		0.103		0.255		0.294		0.184	†
L156	GI-23	0.19		0.279		0.097		0.66		0.2		0.33		0.1		0.95		0.108		0.241		0.262		0.151	
L159	GG-23	0.172		0.254		0.095		0.65		0.16		0.263		0.099		0.832		0.101		0.225		0.261		0.151	

Lab. Code #	Method Codes	Reported data on plant Zinc (mg Zn/kg)																							
		October 2008 (Round 108)								*February 2009 (Round 308)*								*April 2009 (Round 508)*							
		ASP 101		ASP 102		ASP 103		ASP 104		ASP 21		ASP 22		ASP 23		ASP 24		ASP 41		ASP 42		ASP 43		ASP 44	
L002	AD-09	20.9		21.4		11.9		17.9		22.5		43.6		18.5		32.7		14.3		24.6		35.1		23.1	
L005	GI-23	43.7	††	81.9	††	4.82	††	30.3	††	23		42		22.3		29.3		17.7		23.7		32.4		23.2	
L007	AD-13	24.7	†	25.5		15.2		20.5	††	26.3		51.3		21.5		33.3		13.8		26.5		33.3		26.3	
L009	GJ-23	22.6		23.3		17.2		17.3		23.8		41.9		20.6		32.1		17.7		32.6	††	34		25.4	
L011	GJ-23	22.6		24.7		16.2		17.7		25.4		47.2		21.5		34.8		16.1		22.8		31.6		23.4	
L013	DN-23	21.1		21.1		15.3		15.5		23.8		42.5		21.1		30.5		9		20.7		28.2		21.7	
L015	GJ-23	23.4		23.3		16.8		16.8		29.6	††	50.7		27.3	††	38		19		26.8		33.8		27.9	††
L016	GI-23	22.3		22.7		15.2		16.1		24.8		44.9		20.4		33.2		13.7		21.6		30.9		23.3	
L017	DE-23	18	††	16	††	9	††	12		18	††	39		13	††	29		11		18		26		19	††
L018	GJ-23	23		24		17		18		25.3		47.7		21.4		38.5		13.7		22.4		31.3		25.5	
L019	AE-24	17.8	††	18.8		11.9		13.2		22.2		43.9		20		33.8		13.1		22.6		29.6		22.6	
L022	DE-23	22.6		22.1		15.7		16.3		23.9		43.9		20.9		32.4		14.2		22.5		31.6		24.2	
L023	DE-23	21.2		20.8		14.5		15.3		25.6		46.9		23		34.4		11.2		22.6		29.6		22.8	
L024	AD-11	19.6		21.8		12.3		15.7		21.9		37.6		14.5	††	26.5		10.9		96.2	††	19.7	††	26.7	
L026	GI-23	21.5		21.5		14.9		15.6		22.4		42.8		20.4		30.8		13.8		21.2		29.7		22.5	
L028	DE-23	22.8		23.6		16		18.1		25.7		47.4		21.7		37.2		15.5		23.6		31.6		24.5	
L030	GJ-23	19.4		20.5		13.2		13.2		18.7		34.5	††	16	†	26.5									
L032	GG-23	21.3		21.4		14.8		15.8		22.8		41.9		19.2		29.8		13.9		22.2		29.7		23.2	
L034	GG-23	21.9		21.3		16.5		15.6		22.6		42.5		19.7		30.3		13.2		20.7		28.8		22.6	
L035	AB-11	18.7	††	18.5		11.7	†	14.1		22.5		44.3		19.8		31.3		13.1		21.3		31.7		23.6	
L036	DE-23	21.2		22.3		15.7		16.7		22.3		46.5		19.5		31.3		11.8		20.8		25.6		20.9	
L042	GI-11	24		22		15		15.5		23		39		20		31									
L044	GG-23	21.2		24.8		14		17.3		20.8		40		17.8		28.8		15.7		21.2		34.1		24.5	
L046	GJ-23	21.8		22.8		14.8		15										16.9		20.6		27		24	
L064	GJ-11	21.8		18.7		13.6		14		24.5		48.9		12.1	††	46.6	††	14.6		22.8		31.8		27.2	
L079	GJ-23	21.5		22.2		15.8		16.6		23		42.7		21.2		31.8		15.7		24.2		34.5		27.2	
L080	GJ-13	22		22.7		16.2		16.2		26		43.5		18.5		32.5		17		27.3		32.3		25.6	
L084	GJ-09	22.8		23.1		16.3		17.4		24.4		45		20.4		33.4									
L097	DE-23	24.7	†	23.3		16		17		25.5		48.8		22.9		35.2		17.2		23.7		33.2		25.3	
L133	GG-23	16.3	††	19.3		13.7		13.8		24.3		44		21.5		31		6.25	††	10.8	††	13.4	††	10.9	††
L135	DN-23	22.1		21.4		14.5		14.9		27		50		20		35		14		22		33		24	
L139	AD-23	24.7	†	23.5		16.4		18.6		20.2		45		21.7		34.2		15.3		20.5		31.2		22.6	
L156	GI-23	21.2		21.5		15.5		15.5		24.7		44.6		18		30.2		16.7		24.7		32.9		25	
L157	GG-23									38.5	††	30.1	††	18.5		23.6	††								
L159	GG-23	21		21.4		14.4		15.5		22.2		41		19		29.6		12.3		20.1		27.1		20.9	