Australasian Soil and Plant Analysis Council Inc.

ASPAC Plant Proficiency Testing Program Report

2009-10

D.J. Lyons and G.E. Rayment

May 2014

ISSN # 1446-3598

An appropriate citation for this report is:

Lyons, D.J. and Rayment, G.E. (2014). *ASPAC Plant Proficiency Testing Program Report 2009-10.* 46 + vi pp. ASPAC, Melbourne, Victoria.

Disclaimer

Whilst all care has been taken in the preparation of this ASPAC report, persons using this report including the data presented herein do so on the condition and understanding that ASPAC, its officers and agents are not responsible for the results of any action reliant on the information contained in this report or any error or omission from the report.

ASPAC and its officers and agents expressly disclaim all and any liability and responsibility to any person in respect of anything and the consequences of anything done or omitted to be done by any such person in reliance, whether wholly or partially, upon the whole or any part of the contents of this report.

Foreword

This annual report is the sixth 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 35 participants in October 2009, in February 2010 and in April 2010. 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.

Membership of ASPAC Laboratory Proficiency Committee (LPC) 2009-10

Name	*Location*	*Email*
R.J. Hill (Convenor)	Hamilton, NZ	roger@hill-labs.co.nz
G.E. Rayment	Queensland	raymeng@optusnet.com.au
B.K. Daly	Palmerston North, NZ	bbdaly@inspire.net.nz
D.J. Lyons	Queensland	daveandtrish8@bigpond.com

Service Provider Contact Details[A]

Name and Street Address	*Email*
Global Proficiency Ltd. Ruakura Research Campus, Hamilton 3214, NZ; PO Box 20 474, Hamilton 3241, NZ .	jules.marsh@global-proficiency.com

[A] *Previously Proficiency Services Limited, 11/5 Pukete Road PO Box 20, 474, Hamilton, NZ.*

Contents

Page

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, 2007-08 and 2008-09. 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 sixth annual report from ASPAC's new, upgraded plant ILPP that commenced in 2004 and now operates out of New Zealand through Global Proficiency Limited (GPL), 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 2009, in February 2010 and in April 2010. 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 2009-10. 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-five laboratories arranged to participate in the ASPAC plant ILPP in 2009-10, but numbers of reported results varied by "round" and plant test. The most commonly reported tests with an average of 32 laboratories across the three "rounds" were calcium (Ca), magnesium (Mg), and phosphorus (P), with potassium (K) 31, nitrogen (N) and sodium (Na) 30 each.Copper (Cu), iron (Fe), manganese (Mn) and zinc (Zn) results were submitted by 29 laboratories. The least frequently reported tests were silicon (Si), selenium (Se), lead (Pb), and cadmium (Cd), with averages of 5, 12, 12 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 – were offered for the 2009-10 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 2009-10 Plant ILPP

2009-10 Plant tests	Symbol	Units	Number of participants		
			Oct 09	Feb 10	Apr 10
Aluminium	Al	mg/kg	21	21	23
Boron	B	mg/kg	22	24	25
Cadmium	Cd	mg/kg	12	13	13
Calcium	Ca	%	31	34	30
Carbon	C	%	14	14	14
Chloride	Cl	%[A]	19	21	19
Cobalt	Co	mg/kg	18	19	19

2009-10 Plant tests	Symbol	Units	Number of participants		
			Oct 09	Feb 10	Apr 10
Copper	Cu	mg/kg	29	30	29
Iron	Fe	mg/kg	29	30	29
Lead	Pb	mg/kg	11	12	13
Magnesium	Mg	%	31	35	31
Manganese	Mn	mg/kg	29	30	29
Molybdenum	Mo	mg/kg	18	19	19
Nitrogen	N	%	31	33	27
Phosphorus	P	%	31	35	29
Potassium	K	%	31	33	30
Selenium	Se	mg/kg	12	12	11
Silicon	Si	%	5	5	4
Sodium	Na	%	29	32	28
Sulphur	S	%	24	26	25
Zinc	Zn	mg/kg	29	30	29

[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 2009-10 program were distributed and coded as follows: October 2009 – ASP 101-104; February 2010 – ASP 21-24; and April 2010 – 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 2009-10 plant ILPP

Sample ID	*Sample Type*
ASP 101	Wheat, NZ
ASP 102	Lucerne Chaff, NZ
ASP 103	Eucalyptus Leaves, NZ
ASP 104	Potato Leaves, Australia
ASP 21	Carrot, NZ
ASP 22	Rice, NZ
ASP 23	Rose Leaves, NZ
ASP 24	Peavine & Clover, NZ
ASP 41	Meadow Mix, NZ
ASP 42	Pine Needles, NZ
ASP 43	Barley, NZ
ASP 44	Cabbage Leaves, NZ

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 third decimal point, such as 0.001 mg/kg for the ultra-trace metals and 0.001 %, for sodium, while two decimal place only were accepted for other tests, 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.

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 2009-10 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 2009-10 Plants’ program remain valid until superseded by findings from the corresponding 2010-11 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 2009-10. 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.

2009-10: Aluminium (mg Al/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	21	21	21	21	21	21	21	21	23	23	23	23
Minimum i	0.93	127	63.3	142	41.8	0.86	138	331	45.9	287	0	13.7
Maximum i	55.2	299	123	338	862	56.3	261	968	278	658	21.3	177
Median i	4.63	226	84.5	238	63	4	183	682	152	394	4.83	27.7
Mean i	8.28	223	87.5	235	108	9.42	185	658	155	404	6.15	35
MAD i	2.68	24	8.5	53	6	1.29	16	124	10	28	2.22	4.9
IQR i	4.77	37.4	9.79	71.8	17.9	6.02	25.2	183	17	50.4	2.99	7.56
Robust CV% i	100	17	12	30	28	150	14	27	11	13	62	27
Median f	4.5	226	83.9	238	60.6	3.36	183	682	147	394	4.71	27.2
Mean f	5.25	228	83.9	235	60.7	3.44	182	658	147	392	5.47	26.7
MAD f	2.58	23	5.2	53	4.45	0.64	15.5	124	8	28	2.11	4.4
IQR f	3.91	34.3	9.86	71.8	7.08	1.03	23	183	12.8	44.5	3.04	7.34
Robust CV% f	87	15	12	30	12	31	13	27	8.7	11	64	27
Outliers	2	1	2	0	4	6	1	0	3	1	1	2
Stragglers	0	0	0	0	1	1	0	0	2	0	0	0

2009-10: Boron (mg B/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	21	22	22	22	24	23	24	24	25	25	25	25
Minimum i	0	27.3	12.1	25.7	20.6	0.25	45.7	10	0.01	0.51	0.01	5.94
Maximum i	25.8	42.9	28.2	41.6	39.1	7.04	158	21.8	23.8	29.7	14.1	26
Median i	1.02	37.8	16.4	36.35	33.7	1.16	144	14.5	10.1	11.9	0.96	18.6
Mean i	3.42	36.6	16.7	36.1	33.6	1.99	138	14.7	10.3	12.1	1.95	17.9
MAD i	0.72	1.25	1.2	1.8	1.6	0.69	7	0.7	1.29	1.2	0.62	1
IQR i	1.32	2.65	1.93	2.89	2.34	1.66	10.7	1.19	2.29	2.04	1.19	2.56
Robust CV% i	130	7	12	8	6.9	140	7.5	8.2	23	17	120	14
Median f	0.82	38	16.3	36.5	33.8	0.99	146	14.5	10	11.9	0.84	18.6
Mean f	1.08	38.1	16.1	36.6	34.1	1.11	145	14.6	9.93	11.8	1.05	18.1
MAD f	0.51	0.5	1.2	1.7	1.4	0.43	6	0.6	0.74	1.1	0.50	1
IQR f	0.88	0.70	1.85	2.71	2.37	0.70	9.45	0.89	1.2	1.67	0.94	2.45
Robust CV% f	110	1.9	11	7.4	7	71	6.5	6.1	12	14	110	13
Outliers	3	5	1	1	1	3	2	2	4	4	2	2
Stragglers	1	4	0	0	0	2	0	0	1	0	0	0

2009-10: Cadmium (mg Cd/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 41**	**ASP 42**	**ASP 43**	**ASP 44**
No of results	12	12	12	12	13	12	13	13	13	13	13	13
Minimum i	0.043	0.001	0.055	0.608	0.018	0.003	0.014	0.043	0.02	0.053	0.002	0.14
Maximum i	0.084	0.057	0.092	1.06	0.181	0.055	0.050	0.091	0.041	0.119	0.020	0.23
Median i	0.054	0.042	0.068	0.974	0.115	0.006	0.029	0.062	0.027	0.079	0.004	0.166
Mean i	0.056	0.041	0.068	0.931	0.109	0.014	0.031	0.064	0.027	0.083	0.006	0.172
MAD i	0.003	0.003	0.004	0.066	0.014	0.002	0.007	0.005	0.0025	0.005	0.002	0.01
IQR i	0.005	0.007	0.007	0.109	0.02	0.005	0.01	0.01	0.004	0.010	0.003	0.018
Robust CV% i	10	18	9.7	11	17	83	35	16	15	13	81	11
Median f	0.053	0.041	0.068	0.996	0.115	0.005	0.029	0.062	0.027	0.079	0.004	0.165
Mean f	0.054	0.043	0.066	0.96	0.114	0.005	0.031	0.061	0.026	0.079	0.005	0.163
MAD f	0.003	0.001	0.004	0.054	0.003	0.001	0.003	0.004	0.002	0.001	0.002	0.007
IQR f	0.005	0.004	0.006	0.111	0.009	0.002	0.01	0.008	0.003	0.002	0.003	0.011
Robust CV% f	9.4	9.2	9.7	11	7.7	35	35	12	12	2.3	88	6.7
Outliers	1	2	1	1	3	2	0	1	1	2	1	1
Stragglers	0	1	0	0	1	1	0	0	0	3	0	1

2009-10: Calcium (%Ca)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 41**	**ASP 42**	**ASP 43**	**ASP 44**
No of results	31	31	31	31	34	34	34	34	30	30	30	30
Minimum i	0.02	1.22	0.43	0.697	0.1	0.002	0.08	0.1	0.265	0.273	0.01	0.393
Maximum i	0.065	2.06	0.723	1.84	0.52	0.09	1.36	1.44	0.696	0.524	0.062	0.773
Median i	0.048	1.51	0.496	1.17	0.382	0.006	0.816	0.886	0.533	0.414	0.032	0.634
Mean i	0.048	1.52	0.504	1.18	0.379	0.012	0.803	0.886	0.529	0.411	0.031	0.615
MAD i	0.003	0.1	0.031	0.06	0.018	0.002	0.048	0.042	0.032	0.026	0.003	0.044
IQR i	0.005	0.119	0.049	0.089	0.030	0.004	0.073	0.064	0.047	0.042	0.004	0.076
Robust CV% i	9.6	7.9	9.9	7.6	7.8	64	8.9	7.2	8.8	10	12	12
Median f	0.048	1.51	0.496	1.17	0.382	0.006	0.813	0.882	0.538	0.42	0.032	0.635
Mean f	0.048	1.5	0.496	1.17	0.38	0.006	0.815	0.881	0.537	0.42	0.031	0.636
MAD f	0.002	0.07	0.03	0.05	0.012	0.001	0.046	0.030	0.028	0.020	0.001	0.042
IQR f	0.003	0.117	0.046	0.074	0.018	0.002	0.06	0.045	0.044	0.03	0.002	0.059
Robust CV% f	6.7	7.8	9.4	6.3	4.9	27	7.3	5.1	8.1	7.1	7.6	9.3
Outliers	5	2	1	4	3	6	5	5	2	3	6	3
Stragglers	0	1	0	0	4	2	0	1	1	1	4	0

2009-10 Carbon (%C)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	14	14	14	14	14	14	14	14	14	14	14	14
Minimum i	40	41.3	52.3	40.7	38.1	39	43.1	40.6	40.6	46.2	38.9	35.9
Maximum i	51.9	49.6	61.8	47.1	46.3	47.8	53.1	49.8	48.1	54.1	47.1	45
Median i	42.8	43.8	54.6	42.4	40.6	42.0	45.4	42.8	43.6	49.6	42.2	39.8
Mean i	43.4	44.2	55.3	42.6	40.6	41.9	45.6	43.1	43.3	49.4	42.1	39.6
MAD i	1.65	1.5	1.1	0.65	2.1	2.2	1.55	1.4	0.85	0.75	1.15	1.15
IQR i	2.76	2.08	2.14	1.28	2.54	2.69	2.04	2.21	1.83	1.83	2.56	3.06
Robust CV% 1	6.5	4.7	3.9	3	6.3	6.4	4.5	5.1	4.2	3.7	6.1	7.7
Median f	42.7	43.9	54.5	42.1	40.6	42.1	45.1	42.8	43.5	49.7	42.3	39.7
Mean f	42.7	44.2	54.8	42.2	40.6	41.9	45	42.6	43	49.3	42.1	39.2
MAD f	1.2	1.5	0.9	0.9	2.1	2.2	1.3	1.1	0.8	0.65	1.15	1
IQR f	2.59	2.08	1.67	1.33	2.54	2.69	1.96	2.26	1.74	1.56	2.56	2.97
Robust CV% f	6.1	4.7	3.1	3.2	6.3	6.4	4.4	5.3	4	3.1	6.1	7.5
Outliers	1	0	1	1	0	0	1	1	1	2	0	1
Stragglers	0	0	0	0	0	0	0	0	0	0	0	0

2009-10: Chloride (%Cl)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	19	19	19	19	21	21	21	21	19	19	19	19
Minimum i	0.04	0.62	0.176	0.226	0	0	0	0	0.67	0.106	0.05	0.016
Maximum i	0.25	0.92	1.66	1.94	0.89	0.28	0.73	823	7.68	0.23	0.47	0.7
Median i	0.059	0.855	0.228	1.71	0.725	0.037	0.247	0.826	0.72	0.159	0.113	0.283
Mean i	0.073	0.829	0.305	1.61	0.681	0.050	0.273	39.9	1.11	0.161	0.126	0.287
MAD i	0.006	0.039	0.013	0.11	0.055	0.004	0.045	0.036	0.035	0.009	0.013	0.021
IQR i	0.008	0.053	0.023	0.163	0.059	0.007	0.075	0.082	0.054	0.011	0.017	0.034
Robust CV% i	14	6.2	10	9.5	8.1	18	30	10	7.5	7	15	12
Median f	0.058	0.862	0.224	1.71	0.728	0.037	0.244	0.826	0.715	0.158	0.113	0.283
Mean f	0.057	0.853	0.221	1.72	0.716	0.031	0.251	0.81	0.718	0.157	0.11	0.279
MAD f	0.006	0.032	0.013	0.09	0.049	0.004	0.028	0.024	0.03	0.008	0.008	0.021
IQR f	0.008	0.052	0.019	0.137	0.06	0.006	0.056	0.051	0.044	0.011	0.015	0.031
Robust CV% f	14	6	8.5	8	8.3	17	23	6.1	6.1	6.7	13	11
Outliers	3	2	3	2	1	3	3	3	2	3	3	2
Stragglers	0	0	0	0	0	0	0	1	0	0	1	0

2009-10: Cobalt (mg Co/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	18	18	18	18	19	19	18	19	19	19	19	19
Minimum i	0.003	0.16	0.01	0.611	0.005	0.006	0.052	0.062	0.001	0.048	0.005	0.031
Maximum i	0.067	0.289	0.128	0.995	0.704	0.772	0.763	0.763	0.407	0.705	0.363	0.731
Median i	0.014	0.251	0.073	0.822	0.029	0.027	0.194	0.318	0.07	0.084	0.010	0.043
Mean i	0.019	0.241	0.07	0.796	0.073	0.079	0.222	0.346	0.082	0.121	0.057	0.084
MAD i	0.004	0.013	0.006	0.060	0.007	0.010	0.010	0.018	0.005	0.006	0.004	0.005
IQR i	0.0091	0.028	0.01	0.125	0.022	0.031	0.017	0.059	0.009	0.024	0.040	0.013
Robust CV% i	62	11	14	15	74	120	8.8	18	13	28	380	29
Median f	0.013	0.254	0.073	0.823	0.028	0.022	0.19	0.315	0.07	0.08	0.004	0.042
Mean f	0.014	0.253	0.072	0.796	0.027	0.022	0.192	0.318	0.070	0.082	0.008	0.044
MAD f	0.003	0.008	0.003	0.060	0.004	0.005	0.01	0.010	0.004	0.003	0.002	0.004
IQR f	0.006	0.013	0.007	0.125	0.005	0.007	0.013	0.014	0.0070	0.006	0.003	0.010
Robust CV% f	46	5	9.4	15	18	32	6.6	4.5	10	7.1	36	24
Outliers	2	2	5	0	3	3	3	4	3	4	5	2
Stragglers	1	1	0	0	3	3	0	3	1	2	3	0

2009-10: Copper (mg Cu/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	29	29	29	29	30	30	30	30	29	29	29	29
Minimum i	0.22	7	1	4	6.5	0.72	7.68	5.11	4.84	1.84	2.32	1.84
Maximum i	6.74	10.4	9.15	7.77	16.9	8.66	10.4	10.5	16.5	11.9	5.18	7.11
Median i	5.38	8.71	3	6.2	9.44	2.70	9.11	6.98	8.76	6.42	3.77	2.67
Mean i	4.85	8.64	3.22	6.13	9.38	3.05	9.14	7.06	8.88	6.55	3.79	2.92
MAD i	0.32	0.71	0.24	0.51	0.66	0.29	0.72	0.38	0.46	0.49	0.32	0.36
IQR i	0.73	0.91	0.4	0.80	1.14	0.47	1.07	0.58	0.86	0.80	0.58	0.60
Robust CV% i	14	10	13	13	12	17	12	8.4	9.8	12	15	23
Median f	5.46	8.71	3	6.21	9.46	2.68	9.11	6.95	8.77	6.42	3.9	2.6
Mean f	5.47	8.64	3.05	6.2	9.3	2.68	9.14	6.92	8.79	6.5	3.9	2.65
MAD f	0.22	0.71	0.2	0.50	0.62	0.12	0.72	0.3	0.18	0.45	0.36	0.22
IQR f	0.29	0.91	0.31	0.75	0.91	0.19	1.07	0.49	0.30	0.70	0.53	0.385
Robust CV% f	5.4	10	10	12	9.6	7.1	12	7	3.4	11	13	15
Outliers	6	0	6	1	3	8	0	4	5	4	2	3
Stragglers	1	0	0	0	0	4	0	1	4	0	2	0

2009-10: Iron (mg Fe/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	29	29	29	29	30	30	30	30	29	29	29	29
Minimum i	13.8	113	13.7	2.75	13.4	2.61	91.3	281	48.2	48.2	3.54	19.9
Maximum i	51.5	221	96.7	335	91.5	49	354	3060	180	141	44	102
Median i	32.2	182	57.7	273	20.12	5.24	164	520	93.8	86.5	24.5	33.7
Mean i	31.3	180	56.6	253	22.3	8.45	166	592	92.1	88.8	24.6	37.1
MAD i	2	11	3.8	22	3.05	1.95	14.5	36.5	10.2	6	1.9	3.1
IQR i	3.45	19.6	7.41	37.8	4.54	3.79	23.2	54.9	16.5	13.4	3.6	5.86
Robust CV% i	11	11	13	14	23	72	14	11	18	16	15	17
Median f	32.3	182	57.7	280	20.1	4.53	164	521	93.9	85.1	24.5	33.2
Mean f	32.4	182	56.4	275	20	4.92	163	515	93.7	86.3	24.8	33.2
MAD f	1	10.5	3.3	18.5	3	1.32	12	35	6.8	3.8	1.8	2.1
IQR f	1.74	17	6.49	33.4	4.41	2.11	20.8	50.8	10.3	7.19	3.19	3.34
Robust CV% f	5.4	9.4	11	12	22	47	13	9.8	11	8.4	13	10
Outliers	5	1	4	3	1	4	2	2	4	4	6	5
Stragglers	3	0	0	0	0	2	1	0	2	2	0	3

2009-10: Lead (mg Pb/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	11	11	11	11	12	12	12	12	13	13	13	13
Minimum i	0.004	0.001	0.067	0.089	0.014	0.001	0.159	0.185	0.043	0.001	0.001	0.026
Maximum i	0.31	0.31	0.414	0.545	0.554	0.559	0.928	0.898	2.02	2.17	1.98	2.39
Median i	0.025	0.122	0.17	0.239	0.06	0.042	0.286	0.402	0.097	0.216	0.024	0.05
Mean i	0.075	0.146	0.198	0.264	0.113	0.090	0.326	0.426	0.243	0.336	0.179	0.24
MAD i	0.021	0.029	0.032	0.029	0.026	0.039	0.047	0.047	0.023	0.019	0.020	0.014
IQR i	0.104	0.054	0.093	0.053	0.064	0.089	0.068	0.071	0.040	0.072	0.047	0.040
Robust CV% i	420	44	55	22	110	210	24	18	42	33	200	79
Median f	0.016	0.117	0.17	0.239	0.048	0.016	0.283	0.4	0.093	0.218	0.022	0.047
Mean f	0.025	0.113	0.177	0.253	0.064	0.038	0.271	0.383	0.094	0.227	0.029	0.048
MAD f	0.010	0.023	0.031	0.027	0.016	0.016	0.033	0.046	0.022	0.016	0.018	0.011
IQR f	0.033	0.0382	0.059	0.042	0.041	0.052	0.062	0.062	0.038	0.022	0.039	0.019
Robust CV% f	210	33	35	17	85	320	22	15	41	10	180	40
Outliers	3	2	1	2	1	1	1	1	1	4	1	3
Stragglers	0	0	0	0	1	1	0	0	0	0	0	0

2009-10: Magnesium (%Mg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	31	31	31	31	35	35	35	35	31	31	31	31
Minimum i	0.092	0.142	0.167	0.261	0.08	0.01	0.12	0.08	0.083	0.043	0.05	0.069
Maximum i	0.543	0.462	0.523	1.6	0.152	0.031	0.356	0.286	0.21	0.0842	0.104	0.15
Median i	0.132	0.223	0.247	0.663	0.13	0.020	0.26	0.139	0.181	0.067	0.085	0.12
Mean i	0.147	0.224	0.251	0.675	0.13	0.021	0.257	0.142	0.177	0.0667	0.084	0.118
MAD i	0.006	0.013	0.013	0.04	0.008	0.002	0.014	0.006	0.008	0.004	0.005	0.006
IQR i	0.008	0.015	0.021	0.061	0.013	0.002	0.02	0.010	0.013	0.006	0.008	0.010
Robust CV% i	6.2	6.6	8.4	9.2	9.7	9.5	7.7	6.9	7	8.5	9.2	8
Median f	0.132	0.223	0.248	0.671	0.13	0.020	0.26	0.138	0.181	0.067	0.086	0.121
Mean f	0.131	0.223	0.246	0.664	0.131	0.021	0.258	0.138	0.182	0.067	0.086	0.122
MAD f	0.004	0.007	0.012	0.036	0.008	0.002	0.009	0.005	0.005	0.004	0.006	0.005
IQR f	0.007	0.010	0.018	0.056	0.012	0.001	0.015	0.007	0.009	0.006	0.008	0.006
Robust CV% f	5.1	4.7	7.3	8.4	9.3	7.3	5.8	5.4	4.9	8.2	9.4	4.9
Outliers	5	4	3	3	1	3	4	3	2	2	1	5
Stragglers	3	4	0	0	0	0	2	1	4	0	0	0

2009-10: Manganese (mg Mn/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	29	29	29	29	30	30	30	30	29	29	29	29
Minimum i	38.3	37.9	429	128	11.1	4.15	199	63.7	43.7	84	7.56	17
Maximum i	69.8	61.7	593	187	24.5	11.2	280	103	136	181	17.4	77.8
Median i	53.9	44.3	500	164	14.2	9.71	235	84.1	60	103	10	25.2
Mean i	53	43.9	503	163	14.5	9.46	237	83.9	62.8	107	10.4	26.8
MAD i	2.4	2.8	25	9	0.85	0.39	10	4.65	2.8	6.1	0.8	1.6
IQR i	3.97	4.63	37.8	13.3	1.43	0.726	17.8	6.75	4.6	10.7	1.17	2.59
Robust CV% i	7.4	10	7.6	8.1	10	7.5	7.6	8	7.7	10	12	10
Median f	54.2	43.3	500	166	14	9.73	233	84.1	59.7	102	9.95	25.2
Mean f	54.2	42.7	503	165	14.1	9.79	234	83.9	60.2	103	9.8	25.3
MAD f	2.05	2.6	25	9.5	0.9	0.37	11.5	4.35	2.55	5	0.66	1.5
IQR f	3.02	4.37	37.8	13.5	1.39	0.55	18	6.17	3.73	10.5	1.0	2
Robust CV% f	5.6	10	7.6	8.2	10	5.7	7.7	7.3	6.2	10	10	7.9
Outliers	4	2	0	1	2	3	2	2	3	1	2	4
Stragglers	1	0	0	0	0	2	0	0	0	1	1	0

2009-10: Molybdenum (mg Mo/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 10**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 41**	**ASP 42**	**ASP 43**	**ASP 44**
No of results	18	18	18	18	19	19	19	19	19	19	19	19
Minimum i	0.029	0.134	0.001	0.195	0.004	0.44	0.33	0.01	0.168	0.164	0.159	0.191
Maximum i	0.36	0.605	0.305	1.76	0.411	1.07	1.02	0.46	1.68	0.81	0.934	1.26
Median i	0.132	0.388	0.029	1.43	0.029	0.818	0.729	0.184	0.233	0.247	0.195	0.338
Mean i	0.159	0.384	0.062	1.37	0.061	0.805	0.728	0.191	0.377	0.315	0.287	0.437
MAD i	0.031	0.043	0.019	0.195	0.016	0.046	0.047	0.033	0.031	0.053	0.028	0.033
IQR i	0.041	0.075	0.047	0.302	0.025	0.062	0.085	0.047	0.113	0.136	0.129	0.119
Robust CV% i	31	19	160	21	87	7.6	12	26	49	55	66	35
Median f	0.13	0.387	0.021	1.44	0.028	0.821	0.729	0.184	0.213	0.235	0.188	0.333
Mean f	0.143	0.374	0.029	1.44	0.031	0.823	0.734	0.186	0.215	0.24	0.185	0.33
MAD f	0.012	0.03	0.011	0.18	0.014	0.033	0.046	0.031	0.022	0.05	0.012	0.026
IQR f	0.036	0.059	0.025	0.285	0.021	0.056	0.074	0.044	0.028	0.082	0.024	0.037
Robust CV% f	27	15	120	20	74	6.9	10	24	13	35	13	11
Outliers	2	2	3	1	3	3	2	2	4	3	5	5
Stragglers	1	1	1	0	0	0	0	0	1	1	0	1

2009-10: Nitrogen (%N)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 41**	**ASP 42**	**ASP 43**	**ASP 44**
No of results	31	31	31	31	32	33	33	33	27	27	27	27
Minimum i	1.77	2.55	1.39	3.87	0	0	0	0	1.39	1.62	1.11	1.59
Maximum i	2.4	3.14	2.11	5.2	1.91	1.47	2.76	2.1	1.86	2.09	1.43	2.1
Median i	2.03	2.83	1.6	4.86	1.48	1.25	2.07	1.84	1.63	1.87	1.26	1.89
Mean i	2.02	2.83	1.6	4.81	1.45	1.19	2.04	1.78	1.63	1.87	1.27	1.87
MAD i	0.08	0.07	0.07	0.14	0.06	0.04	0.09	0.09	0.06	0.08	0.06	0.1
IQR i	0.15	0.12	0.11	0.25	0.10	0.082	0.13	0.14	0.10	0.13	0.10	0.16
Robust CV% i	7.3	4.2	6.9	5.2	6.9	6.5	6.4	7.7	5.9	7.1	7.6	8.6
Median f	2.02	2.83	1.59	4.94	1.48	1.25	2.07	1.84	1.66	1.87	1.26	1.89
Mean f	2	2.83	1.57	4.9	1.48	1.24	2.07	1.85	1.65	1.87	1.27	1.87
MAD f	0.09	0.07	0.06	0.1	0.05	0.04	0.08	0.09	0.06	0.08	0.06	0.1
IQR f	0.14	0.11	0.10	0.16	0.09	0.07	0.13	0.13	0.08	0.13	0.10	0.16
Robust CV% f	7.1	3.9	6.5	3.3	6.3	5.6	6.1	6.8	4.9	7.1	7.6	8.6
Outliers	1	1	2	3	3	3	4	2	2	0	0	0
Stragglers	0	1	0	1	1	0	0	0	0	0	0	0

2009-10: Phosphorus (%P)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	31	31	31	31	35	35	35	35	29	29	29	29
Minimum i	0.1	0.04	0.07	0.1	0.12	0.053	0.017	0.15	0.139	0.11	0.205	0.16
Maximum i	0.429	0.259	0.111	0.418	0.228	0.15	0.232	0.235	0.286	0.2	0.348	0.329
Median i	0.386	0.226	0.084	0.375	0.185	0.095	0.177	0.211	0.24	0.164	0.312	0.268
Mean i	0.374	0.22	0.086	0.36	0.183	0.096	0.171	0.209	0.234	0.162	0.304	0.262
MAD i	0.013	0.008	0.003	0.012	0.007	0.007	0.006	0.007	0.01	0.007	0.014	0.016
IQR i	0.018	0.010	0.004	0.016	0.010	0.010	0.009	0.009	0.016	0.01	0.022	0.024
Robust CV% i	4.8	4.6	4.4	4.3	5.6	11	5	4.2	6.6	6.1	7.1	9.1
Median f	0.387	0.226	0.084	0.376	0.186	0.096	0.177	0.212	0.24	0.165	0.315	0.27
Mean f	0.386	0.225	0.084	0.375	0.186	0.097	0.178	0.213	0.237	0.166	0.313	0.268
MAD f	0.01	0.006	0.002	0.006	0.006	0.006	0.004	0.006	0.007	0.005	0.012	0.011
IQR f	0.017	0.01	0.002	0.012	0.009	0.009	0.007	0.009	0.012	0.008	0.019	0.020
Robust CV% f	4.3	4.4	2.7	3.1	5	8.9	3.8	4	5.1	4.9	6.1	7.3
Outliers	2	2	6	3	4	3	6	2	3	3	2	2
Stragglers	1	0	3	4	1	2	2	0	1	1	1	2

2009-10: Potassium (%K)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	31	31	31	31	33	33	33	33	30	30	30	30
Minimum i	0.258	1.38	0.08	0.495	1.43	0.033	1.13	1.07	0.71	0.42	0.216	1.07
Maximum i	0.459	2.38	0.396	7.27	3.08	0.509	3.04	2.1	1.71	0.835	0.462	3.29
Median i	0.376	1.81	0.29	5.26	2.51	0.1	1.85	1.68	1.44	0.684	0.394	2.66
Mean i	0.379	1.86	0.288	5.11	2.5	0.115	1.88	1.68	1.39	0.664	0.379	2.57
MAD i	0.028	0.09	0.019	0.36	0.11	0.010	0.1	0.08	0.07	0.040	0.028	0.135
IQR i	0.047	0.178	0.033	0.608	0.182	0.015	0.148	0.119	0.145	0.083	0.053	0.204
Robust CV% i	12	9.8	11	12	7.2	15	8	7.1	10	12	13	7.7
Median f	0.377	1.78	0.29	5.26	2.51	0.099	1.84	1.68	1.44	0.691	0.4	2.66
Mean f	0.383	1.8	0.289	5.34	2.53	0.10	1.84	1.68	1.42	0.681	0.393	2.62
MAD f	0.026	0.06	0.016	0.294	0.09	0.008	0.07	0.050	0.07	0.038	0.03	0.13
IQR f	0.045	0.1	0.024	0.469	0.145	0.012	0.104	0.07	0.137	0.055	0.039	0.163
Robust CV% f	12	5.6	8.2	8.9	5.8	12	5.6	4.2	9.5	8.1	9.8	6.1
Outliers	1	4	5	4	3	6	4	5	1	2	3	3
Stragglers	0	3	0	1	1	0	2	2	0	0	0	0

2009-10: Selenium (mg Se/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	12	12	12	12	12	12	12	12	11	11	11	11
Minimum i	0.001	0.001	0.028	0.001	0.01	0.007	0.014	0.011	0.018	0.001	0.001	0.044
Maximum i	0.16	0.262	0.555	0.186	1.33	2.12	0.646	0.48	0.422	0.079	0.032	0.324
Median i	0.012	0.04	0.042	0.045	0.053	0.037	0.035	0.024	0.175	0.049	0.016	0.115
Mean i	0.042	0.061	0.13	0.066	0.205	0.215	0.117	0.067	0.168	0.045	0.016	0.127
MAD i	0.004	0.014	0.012	0.017	0.036	0.008	0.016	0.009	0.015	0.008	0.001	0.014
IQR i	0.038	0.024	0.077	0.059	0.148	0.016	0.064	0.016	0.067	0.013	0.003	0.035
Robust CV% i	300	59	180	130	280	42	180	66	38	26	20	30
Median f	0.01	0.036	0.039	0.033	0.022	0.035	0.028	0.021	0.189	0.052	0.016	0.115
Mean f	0.011	0.035	0.042	0.033	0.038	0.031	0.03	0.022	0.181	0.055	0.016	0.122
MAD f	0.001	0.012	0.006	0.006	0.012	0.006	0.011	0.007	0.008	0.006	0.001	0.008
IQR f	0.004	0.02	0.013	0.014	0.04	0.017	0.017	0.014	0.017	0.013	0.001	0.024
Robust CV% f	44	56	33	44	180	47	60	65	9	22	6.7	21
Outliers	4	2	3	2	3	2	3	2	4	2	4	2
Stragglers	1	0	0	2	0	0	0	0	0	0	0	1

2009-10: Silicon (%Si)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	5	5	5	5	5	5	5	5	4	4	4	4
Minimum i	0.001	0.022	0.022	0.018	0.001	0.002	0.022	0.019	0.219	0.011	0.01	0.004
Maximum i	0.0079	0.159	0.060	0.24	0.071	0.032	0.496	0.994	309	143	118	93.7
Median i	0.002	0.037	0.035	0.046	0.004	0.007	0.087	0.196	1.50	0.0955	0.083	0.075
Mean i	0.003	0.075	0.04	0.108	0.022	0.012	0.207	0.347	78.1	35.8	29.5	23.5
MAD i	0.001	0.0149	0.013	0.028	0.002	0.005	0.065	0.177	0.756	0.076	0.07	0.069
IQR i	0.003	0.084	0.024	0.144	0.036	0.014	0.278	0.52	172	79.5	65.6	52.1
Robust CV% i	160	230	69	310	1100	210	320	270	11000	83000	79000	69000
Median f	0.002	0.035	0.035	0.046	0.002	0.007	0.087	0.196	1.28	0.027	0.013	0.006
Mean f	0.003	0.033	0.04	0.108	0.002	0.012	0.207	0.347	1.08	0.068	0.013	0.006
MAD f	0.001	0.002	0.013	0.028	0.001	0.005	0.065	0.177	0.454	0.016	0.003	0.002
IQR f	0.003	0.011	0.024	0.144	0.002	0.014	0.278	0.52	1.12	0.113		
Robust CV% f	160	32	69	310	74	210	320	270	88	420		
Outliers	0	1	0	0	2	0	0	0	1	1	1	1
Stragglers	0	1	0	0	0	0	0	0	0	0	1	1

2009-10: Sodium (%Na)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	29	29	29	29	32	32	32	32	28	28	28	28
Minimum i	0.002	0.075	0.111	0.117	0.229	0.001	0.003	0.008	0.072	0.026	0.004	0.033
Maximum i	0.051	0.167	0.285	0.379	1.03	0.502	0.129	1.62	0.161	0.072	0.045	0.082
Median i	0.005	0.113	0.2	0.265	0.569	0.002	0.011	0.094	0.126	0.041	0.009	0.052
Mean i	0.010	0.114	0.202	0.266	0.576	0.021	0.021	0.14	0.125	0.041	0.010	0.053
MAD i	0.0014	0.007	0.015	0.015	0.0385	0.001	0.002	0.006	0.01	0.002	0.001	0.004
IQR i	0.003	0.0111	0.023	0.031	0.064	0.003	0.006	0.009	0.015	0.003	0.001	0.006
Robust CV% i	66	9.8	11	12	11	170	56	9.2	12	8.3	17	12
Median f	0.005	0.113	0.2	0.263	0.569	0.001	0.011	0.094	0.126	0.042	0.009	0.052
Mean f	0.005	0.112	0.202	0.265	0.574	0.002	0.011	0.094	0.127	0.042	0.009	0.053
MAD f	0.001	0.007	0.011	0.009	0.031	0.001	0.001	0.005	0.01	0.002	0.001	0.003
IQR f	0.001	0.011	0.02	0.015	0.05	0.001	0.002	0.008	0.015	0.003	0.001	0.005
Robust CV% f	25	9.4	10	5.6	8.8	110	21	8.5	12	7	9.5	9.3
Outliers	6	3	2	7	4	8	7	5	1	3	5	3
Stragglers	0	0	0	2	0	1	2	0	0	1	0	0

2008-09: Sulfur (%S)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	24	24	24	24	26	26	26	26	25	25	25	25
Minimum i	0.126	0.221	0.103	0.355	0.01	0.005	0.017	0.016	0.106	0.051	0.005	0.374
Maximum i	0.165	0.313	0.163	0.462	0.241	0.157	0.897	1.64	0.198	0.146	0.12	0.754
Median i	0.139	0.252	0.124	0.4	0.144	0.090	0.282	0.226	0.173	0.131	0.103	0.614
Mean i	0.141	0.251	0.126	0.398	0.144	0.089	0.298	0.269	0.168	0.125	0.098	0.61
MAD i	0.007	0.012	0.008	0.018	0.007	0.006	0.018	0.012	0.008	0.009	0.007	0.036
IQR i	0.011	0.020	0.012	0.029	0.011	0.008	0.027	0.023	0.016	0.015	0.012	0.058
Robust CV% i	8.1	8.1	9.3	7.3	7.4	9.4	9.6	10	9.2	12	12	9.4
Median f	0.139	0.252	0.123	0.4	0.145	0.091	0.283	0.226	0.173	0.132	0.103	0.615
Mean f	0.141	0.248	0.123	0.398	0.145	0.091	0.284	0.222	0.17	0.128	0.101	0.62
MAD f	0.007	0.011	0.007	0.018	0.006	0.005	0.016	0.011	0.008	0.008	0.007	0.036
IQR f	0.011	0.021	0.010	0.029	0.010	0.008	0.024	0.02	0.016	0.014	0.012	0.055
Robust CV% f	8.1	8.2	7.9	7.3	6.8	8.5	8.6	8.7	9.2	10	11	9
Outliers	0	1	2	0	2	3	2	2	1	1	1	1
Stragglers	0	0	0	0	0	0	0	0	0	0	0	0

2009-10: Zinc (mg Zn/kg)

Statistical parameters	Plant sample identification and values											
	October 2009 (Round 109)				*February 2010 (Round 309)*				*April 2010 (Round 509)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 41	ASP 42	ASP 43	ASP 44
No of results	29	29	29	29	30	30	30	30	29	29	29	29
Minimum i	19.3	16.7	5.1	41	16.9	9.5	31.6	17.4	4.24	19.9	10.3	6.79
Maximum i	33.9	26.8	16.1	66.4	29	18	47.9	27.3	33.9	89.5	53.8	27.6
Median i	29.8	22.3	12	50.4	22.8	15.4	43	21.8	23.2	71.5	20.3	15.7
Mean i	29	22.1	12	50.2	22.9	15.2	43.2	22.1	22.4	69.4	21	15.7
MAD i	1.3	0.8	0.6	2.8	1.25	0.85	1.25	1.3	1.8	4.1	1.9	1.6
IQR i	1.96	1.48	0.89	4.26	2.11	1.33	2.58	1.67	2.63	6.6	2.97	2.56
Robust CV% i	6.6	6.6	7.4	8.5	9.3	8.6	6	7.6	11	9.2	15	16
Median f	30	22.4	12	50.4	22.8	15.5	43	21.8	23.5	71.5	20.3	15.8
Mean f	30	22.4	12	49.7	23	15.5	43.5	21.9	23.3	71	20.3	16.2
MAD f	1	0.5	0.5	2.6	0.8	0.8	1.15	1.3	1.7	3.1	1.5	1.5
IQR f	1.59	0.85	0.78	4.13	1.8	1.17	2.28	1.7	2.34	4.86	2.22	2
Robust CV% f	5.3	3.8	6.5	8.2	7.9	7.5	5.3	7.8	9.9	6.8	11	13
Outliers	3	7	5	1	3	2	2	1	4	3	3	4
Stragglers	1	2	0	0	1	0	0	0	0	1	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.

The median robust % CVs across the 12 samples by test, after the removal of "outliers" and "stragglers", ranged from 4.6 (for P) to 185% (for Si). 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 2008-09 plant exchange. There were some "round-by-round" fluctuations in measurement performance by test, but total P always had the lowest robust %CVs and Si the highest. Overall, 11 of the 21 tests had median CVs of <10%, (same number in 2008-09), with another five being <15% (one more than 2008-09). Silicon is the only test with CV >100% and shows that there is a major issue with the methodologies used by the participating laboratories. Moreover, the number of laboratories reporting Si is now less than six, so it is likely that Si will not be included in this ILPP in future.

On a sample-by-sample basis, the median robust %CV across the 21 tests ranged from 7.3% (ASP 24) to 17% (ASP 22), with a grand median for the 12 samples of 9.0%. Sample ASP 22 was rice, and had extremely low concentrations of Ca, Mg, Na and K in particular, with medians of 0.006%, 0.02%, 0.001% and 0.1% respectively. Accordingly only this sample was considered more difficult to analyse than the others.

Table 4. The six best performed and worst performed plant chemical tests in 2009-10, based on median percent robust coefficients of variation after the removal of "outliers" and "stragglers". Numbers in brackets show corresponding performance data for 2008-09.

Best (Lowest Robust %CVs)	
Plant test	***%CV***
Phosphorus	4.6 (7.1)
Carbon	5.0 (4.5)
Nitrogen	6.4 (6.7)
Magnesium	6.6 (7.7)
Calcium	7.4 (7.6)
Zinc	7.6 (8.6)

Worst (Highest Robust %CVs)	
Plant test	***%CV***
Cobalt	12.5 (20)
Molybdenum	17.5 (13.5)
Aluminum	21 (21)
Lead	37.5 (94)
Selenium	44 (48)
Silicon	185 (140)

Appendix 1: List of laboratories who participated in ASPAC's Plant ILPP in 2009-10

Mr Phil Barnett (Manager)
Australian Perry Agricultural Laboratory
PO Box 327
Magill, SA 5072
AUSTRALIA

E-mail: phil.barnett@apal.com.au

Mrs Stephanie Cameron
(Laboratory Operations Manager)
East West EnviroAg
82 Plain Street
Tamworth, NSW 2340
AUSTRALIA

E-mail: admin@ewenviroag.com.au

Miss Tania Collins (Lab Technician)
Tweed Laboratory Centre
Tweed Shire Council
46 Enterprise Avenue
Tweed Heads South, NSW 2486
AUSTRALIA

E-mail: taniac@tweedlab.com.au

Mr Tom Dutton (Laboratory Manager)
Landcare Research NZ Ltd
Private Bag 11052
Palmerston North
NEW ZEALAND

E-mail: Duttont@landcareresearch.co.nz

Doreen Fernandez
(Laboratory Operations Manager)
Agrifood Technology
260 Princes Highway
Werribee, VIC 3030
AUSTRALIA

E-mail: doreen.fernandez@agrifood.com.au

Ms Mereoni Degei Gonelevu
(Quality Control Coordinator)
Institute of Applied Science Laboratory
University of the South Pacific
Suva
FIJI

E-mail: gonelevu_m@usp.ac.fj

Mr Steve Byrne (Lab Manager)
Vintessential Laboratories
PO Box 2244
Dromana, VIC 3936
AUSTRALIA

E-mail: steve@vintessential.com.au

Mr Rob Cirocco (Manager)
Phosyn Analytical
P.O.Box 2594
Burleigh MDC, QLD 4220
AUSTRALIA

E-mail: rcirocco@phosyn.com

Mr Peter Corbett
National Agricultural Chemistry Laboratory NARI
PO Box 8277
BOROKO 111
National Capital District
PAPUA NEW GUINEA

E-mail: peter.corbett@nari.org.pg

Kaye Eason (Laboratory Coordinator)
Veritec
Private Bag 3020
Rotorua
NEW ZEALAND

E-mail: kaye.eason@veritec.co.nz

Mr Gary Glenn (Quality Manager)
Analytical Research Laboratories Ltd
PO Box 989
Napier
NEW ZEALAND

E-mail: Gary.Glenn@ravensdown.co.nz

Muni Sangeeta Goundar
(Laboratory Technician)
Sugar Research Institute of Fiji Analytical Lab
PO Box 3560
Lautoka
FIJI

E-mail: jeeteendrap@srif.org.fj

Mr Geoff Griffith (Technical Manager)
Industry & Investment NSW
1243 Brunxner Hwy
Wollongbar, NSW 2477
AUSTRALIA

E-mail: geoff.griffith@dpi.nsw.gov.au

Ms Sarah Houston
Nutri-Lab Agricultural Laboratories
PO Box 782
Goondiwindi, QLD 4390
AUSTRALIA

E-mail: nutrilab@bigpond.net.au

Mr Vincent Koddy (Chief Chemist)
National Analysis Laboratory
PNG University of Technology
PO Box 79
Lae
PAPUA NEW GUINEA 414

E-mail: vkoddy@nal.unitech.ac.pg

Mr Robert Lascelles (Chief Chemist)
SGS Australia
Po Box 549
Toowoomba, QLD 4350
AUSTRALIA

E-mail: Robert.Lascelles@sgs.com

Mr Dave Lyons (Principal Chemist)
Chemistry Centre DERM
Block B, 80 Meiers Rd
Indooroopilly, QLD 4068
AUSTRALIA

E-mail: dave.lyons@derm.qld.gov.au

Mr Peter McCafferty (Chief Chemist)
ChemCentre Curtin University
PO Box 1250
Bentley Delivery Centre, WA 6983
AUSTRALIA

E-mail: pmccafferty@chemcentre.wa.gov.au

Dr Roger Hill
Hill Laboratories
Private Bag 3205
Hamilton 3240
NEW ZEALAND

E-mail: Roger.Hill@hill-labs.co.nz

Léocadie Jamet (Lab Manager)
Laboratoire des Moyens Analytiques IRD
BP A5
Noumea
NEW CALEDONIA

E-mail: Leocadie.Jamet@ird.fr

Mr Graham Lancaster (Laboratory Manager)
Environmental Analysis Laboratory (EAL)
Southern Cross University
PO Box 5125
East Lismore, NSW 2480
AUSTRALIA

E-mail: glancast@scu.edu.au

Mr Matthew Lee (Laboratory Manager)
Melbourne School of Land and Environment
University of Melbourne
Water Street
Creswick, VIC 3363
AUSTRALIA

E-mail: mattlee@unimelb.edu.au

Katie McBryde (Laboratory Manager)
Sydney Environmental & Soil Laboratory
PO Box 357
Pennant Hills, NSW 1715
AUSTRALIA

E-mail: kate@sesl.com.au

Mr Ted Mikhail (Managing Director)
SWEP Pty Ltd Analytical Laboratories
PO Box 583
Noble Park, VIC 3174
AUSTRALIA

E-mail: services@swep.com.au

Mr Lyndon Palmer (Analytical Chemist)
Waite Analytical Services
School of Agriculture, Food and Wine
University of Adelaide
Room LG11, Main Waite Bldg
Private Mail Bag 1
Glen Osmond, SA 5064
AUSTRALIA

E-mail: lyndon.palmer@adelaide.edu.au

Daya Perera
Alafua School of Agriculture and Food Technology
University of the South Pacific
Private Bag
Apia, SAMOA

E-mail: perera_d@samoa.usp.ac.fj

Ami Sharma (PRO)
Fiji Agricultural Chemistry Laboratory
MASLR
PO Box 77
Nausori, FIJI

E-mail: ami.sharma@govnet.gov.fj

Ms Julie Smith (Manager, Analytical Services)
CSIRO Land and Water Adelaide
Private Bag 2
Glen Osmond, SA 5064
AUSTRALIA

E-mail: julie.smith@csiro.au

Ms Patricia Wallace (Laboratory Manager)
CSIRO Division of Plant Industry
GPO Box 1600
Canberra, ACT 2601
AUSTRALIA

E-mail: Patricia.Wallace@csiro.au

George Croatto
Department of Primary Industries
Werribee Centre
621 Sneydes Rd
Werribee, VIC 3030
AUSTRALIA

E-mail: george.croatto@dpi.vic.gov.au

Mr Graeme Patch (Senior Chemist)
Dept Regional Development, Primary Industry,
Fisheries & Resource
Berrimah Agricultural Research Centre
GPO Box 3000
Darwin, NT 0801
AUSTRALIA

E-mail: Graeme.Patch@nt.gov.au

Dr Geof Proudfoot (Laboratory Manager)
CSBP
2 Altona St
Bibra Lake, WA 6163
AUSTRALIA

E-mail: geof.proudfoot@csbp.com.au

Mr Michael Smirk (Analytical Chemist)
School of Earth and Environment
University of Western Australia
35 Stirling Highway
Crawley, WA 6009
AUSTRALIA

E-mail: Michael.Smirk@uwa.edu.au

Mr David Wade
The Environmental and Analytical Laboratories
Charles Sturt University Boorooma Campus
Building 269 Nathan Cobb Drive
Locked Bag 677
Wagga Wagga, NSW 2678, AUSTRALIA

E-mail: DWade@csu.edu.au

Mr Philip Williams (Laboratory Manager)
Nutrient Advantage Laboratory Services
8 South Rd
Werribee, VIC 3030
AUSTRALIA

E-mail: philip.williams@incitecpivot.com.au

Appendix 2: Summary examples of homogeneity data and statistical Assessments for plant samples used in the ASPAC Plant ILPP in 2009-10*.

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	1.92	2.91	1.56	4.97	1.54	1.19	2.20	1.74	1.64	1.91	1.19	2.03
	replicate 2	1.96	2.86	1.60	4.98	1.56	1.12	2.19	1.71	1.58	1.89	1.18	2.05
Sample 2	replicate 1	1.95	3.05	1.61	5.01	1.50	1.17	2.27	1.77	1.63	1.89	1.17	2.04
	replicate 2	1.95	3.00	1.60	5.00	1.55	1.15	2.22	1.69	1.58	1.94	1.20	2.03
Sample 3	replicate 1	1.96	2.90	1.61	5.03	1.52	1.15	2.22	1.80	1.53	1.90	1.17	2.03
	replicate 2	1.95	2.83	1.61	4.99	1.54	1.14	2.22	1.75	1.56	1.88	1.19	2.04
Sample 4	replicate 1	1.96	2.96	1.56	4.95	1.51	1.15	2.18	1.74	1.56	1.92	1.19	2.07
	replicate 2	1.93	2.91	1.60	4.96	1.59	1.15	2.18	1.70	1.54	1.90	1.21	2.03
Sample 5	replicate 1	1.96	2.93	1.59	5.04	1.50	1.13	2.20	1.79	1.55	1.90	1.20	2.06
	replicate 2	1.97	2.86	1.61	5.00	1.55	1.14	2.22	1.76	1.55	1.90	1.19	2.03
Sample 6	replicate 1	1.94	2.98	1.60	5.04	1.49	1.14	2.14	1.78	1.61	1.93	1.18	2.05
	replicate 2	1.97	2.90	1.59	5.00	1.57	1.14	2.18	1.83	1.56	1.91	1.20	2.03
Sample 7	replicate 1	1.94	2.92	1.61	5.07	1.55	1.15	2.20	1.77	1.57	1.91	1.19	2.06
	replicate 2	1.96	2.86	1.60	5.00	1.58	1.17	2.20	1.75	1.57	1.90	1.16	2.03
Sample 8	replicate 1	1.97	2.91	1.60	4.89	1.50	1.10	2.23	1.74	1.54	1.93	1.15	2.07
	replicate 2	1.93	2.90	1.59	4.90	1.52	1.16	2.22	1.78	1.55	1.91	1.17	2.07
Sample 9	replicate 1	1.95	2.84	1.61	5.05	1.49	1.14	2.20	1.80	1.55	1.92	1.18	2.03
	replicate 2	1.95	2.78	1.60	5.00	1.46	1.08	2.20	1.74	1.53	1.90	1.18	2.01
Sample 10	replicate 1	1.95	2.90	1.62	5.05	1.49	1.15	2.23	1.80	1.57	1.90	1.17	2.04
	replicate 2	1.95	2.89	1.59	4.99	1.51	1.15	2.21	1.76	1.59	1.90	1.18	2.03
Mean		1.951	2.905	1.597	4.996	1.525	1.143	2.206	1.759	1.568	1.906	1.182	2.040
Analytical Variance		0.0003	0.00141	0.00021	0.00078	0.0011	0.00065	0.00023	0.00115	0.00049	0.00023	0.00019	0.00026
Sampling Variance		0	0.00256	0	0.00151	0.00014	0	0.00046	0.00015	0.00041	0	0.00005	0.000017
SD of proficiency data		0.1334	0.1038	0.09	0.148	0.07413	0.0593	0.119	0.132	0.089	0.119	0.089	0.148
Homogeneity index		**0**	**0.488****	**0**	**0.262**	**0.161**	**0**	**0.181**	**0.094**	**0.227**	**0**	0.0815	0.0278
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, the critical value for test (c) is less than the sampling variance

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 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	5.02		299		120	††	338										180		368		7.05		28.2	
L009	GJ-23	7.23		150		69.6		163		54.8		3.85		144		540		124		287		11.1		30	
L011	GJ-23	9.19		222		79.9		288		64.6		7.55		183		682		154		422		6.49		34.4	
L013	DN-23	6.4		226		82.4		252		60.7		1.4		168		797		147		362		2.53		32.3	
L016	GJ-23	2.75		226		89.1		272		66.8		3.68		195		842		165		416		4.59		26.9	
L017	DE-23	1		255		93		318		144	††	23	††	261	††	856		188	†	481		6.75		37	
L019	AE-24	14.3		217		104		300		862	††	25.9	††	199		558		127		393		1.22		17.3	
L022	DE-23	4.5		226		83		224		69		4		199		708		146		409		5.9		27.7	
L023	DN-23	4.29		250		93		272		60.5		0.86		189		770		145		374		3.7		22.8	
L024	AD-23									41.8		2.71		138		393		229	††	658	††	11.1		66.7	††
L026	GI-23	1.92		197		75		182		65.5		4.42		180		591		152		434		6.54		26.8	
L028	DE-23	12.5		262		85		269		80		12	††	211		728		155		386		12		33	
L030	GJ-23	3.26		248		84.5		238		51.4		2.83		169		831		145		317		3.34		19.7	
L032	GG-23	7.21		196		83.9		201		60.3		8.52	†	164		531		122		334		2		13.7	
L034	GG-23	2.89		209		79.7		169		86	†	3.03		205		599		157		442		7.18		29.3	
L036	DE-23	4.63		262		104		292		59.1		4.67		183		611		142		374		3.87		25.7	
L079	GJ-24	1.33		211		66.8		184		61.5		2.71		186		733		153		394		4.38		29.1	
L097	DE-23	8.37		263		93		265		95	††	14.1	††	216		968		183	†	442		0.001		38	
L133	GG-23									58.5		3.74		182		689		158		400		4.83		27.2	
L135	DN-23	19	††	187		85		185		63		9.84	††	168		531		145		416		10.3		26.6	
L139	AD-23	0.93		127	††	63.3		158		53.1		2.77		147		331		45.9	††	333		2.27		18.3	
L156	GI-23	55.2	††	239		123	††	214		109	††	56.3	††	207		533		278	††	476		21.3	††	177	††
L159	DE-23	1.95		207		80.7		142										126		366		3.14		16.7	

Lab. Code #	Method Codes	Reported data on plant Boron (mg B/kg)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	18.8	††	31.2	††	12.1		25.7	††									23.8	††	29.7	††	14.1	††	19.6	
L009	DE-23	0.82		32.2	††	14.6		32.9		30.2		1.37		129		14.5		9.73		10.8		0.84		16	
L011	GJ-23	3.9	†	27.3	††	12.4		33.3		37.6		7.04	††	143		21.8	††	15.5	††	13.6		2.35		20.2	
L013	DN-23	0.24		35	†	14.8		33.8		33.1		0.53		146		14.1		9.02		10.4		0.13		17.7	
L016	GI-23	0.673		38.5		16.9		36.5		34.3		0.46		152		13.9		10.1		12.7		0.39		19.3	
L017	DE-23									32		1		143		10	††	0.01	††	1.43	††	0.01		5.94	††
L018	GJ-23	0.52		37.4		16.3		37.1		34.5		0.79		142		13.9		7.69		10.8		0.43		20.3	
L019	AE-24	1.4		38		17.3		36.2		30.9		1.16		136		14.7		10.4		12.2		0.74		19.6	
L022	DE-23	0.82		38		17.1		37.2		33.8		0.7		150		14.1		9.9		11.9		1.25		18.8	
L023	DN-23			38.2		16		36		30.8		0.25		141		13.7		8.14		9.88		0.26		15.2	
L024	AD-23									38.9				158		14.8		15.2	†	13.8		2.75		26	††
L026	GI-23	2.52		37.6		17.7		38.2		35		1.39		148		15.5		10.2		12		0.57		17.9	
L028	DE-23	2.1		38		15.1		37.5		35		2		156		14.5		9.8		11.6		2.2		17.6	
L030	GJ-23	2.02		38.5		15.7		38.6		33		2.94		138		15.8		11.3		11.2		1.65		15.2	
L032	GG-23	2.25		39.8		19.8		36.1		36.4		4.85	††	137		13.3		12.9		14.7		1.08		17.9	
L034	GG-23	1.33		35	†	14.6		34.6		33.4		2.13		140		14.4		10.1		12.2		0.96		19	
L036	DE-23	0.53		40.4	†	16.5		39.6		37.1		0.86		158		16.4		10.5		11.3		0.64		18.6	
L045	GI-23	4.96	††	42.9	††	19.7		41.6		39.1		6.61	††	125		15.5		8.31		9.42		10.5	††	14.8	
L064	GJ-30	25.8	††	34.7	†	28.2	††	39.3		30.9		3.53	†	45.7	††	13.3		12		23.3	††	1.44		19.6	
L080	GJ-30									20.6	††	3.8	†	74	††	13.45									
L097	DE-23	0.001		37.5		17		35.3		35.2		0.47		158		14.6		10.3		13.1		0.41		19.7	
L133	GG-23									33.6		1.0		151		14.9		7.36		9.82		1.8		17.8	
L135	DN-23	1		31	††	14		33		32		0.26		145		13.5		8.81		10.2		0.34		16.3	
L139	AD-23	0.30		39.2		17.5		40.2		33.3		0.98		153		14.9		9.89		12.2		1.33		18.6	
L156	GI-23	1.02		38.3		16		37		34.7		1.7		151		16.8		12.1		13		2.6		20.5	
L159	DE-23	0.73		36.7		17		34.9										3.16	††	0.51	††	0.01		15.8	

Lab. Code #	Method Codes	Reported data on plant Cadmium (mg Cd/kg)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.058		0.047		0.068		0.878		0.118		0.007		0.026		0.058		0.028		0.078		0.007		0.14	
L011	DE-23	0.084	††	0.057	††	0.092	††	0.88		0.181	††	0.055	††	0.039		0.091	††	0.030		0.093	†	0.009		0.169	
L013	DN-23	0.06		0.054	†	0.068		0.996		0.135		0.006		0.036		0.077		0.031		0.090	†	0.006		0.207	†
L016	GJ-24	0.059		0.043		0.074		1.05		0.115		0.003		0.029		0.061		0.024		0.084		0.002		0.172	
L019	AE-24	0.051		0.038		0.055		0.773		0.05	††	0.012	†	0.025		0.043		0.028		0.079		0.006		0.17	
L022	DE-24	0.053		0.04		0.064		0.93		0.099		0.005		0.028		0.058		0.02		0.079		0.003		0.165	
L023	DN-24	0.052		0.041		0.068		1.03		0.11		0.003		0.025		0.0629		0.024		0.081		0.002		0.162	
L024	AD-03									0.018	††			0.015		0.057		0.041	††	0.119	††	0.019	††	0.188	
L028	DE-24	0.055		0.041		0.061		1.06		0.116		0.006		0.038		0.062		0.027		0.074		0.007		0.15	
L030	DE-24	0.05		0.051		0.066		1.01		0.117		0.009		0.047		0.073		0.027		0.078		0.003		0.155	
L032	GG-24	0.053		0.043		0.061		1.00		0.115		0.004		0.050		0.0632		0.026		0.078		0.003		0.156	
L079	GJ-24	0.043		0.001	††	0.071		0.608	††	0.138	†	0.005		0.029		0.069		0.027		0.093	†	0.004		0.23	††
L133	GG-02									0.101		0.049	††	0.014		0.052									
L159	DE-23	0.057		0.04		0.07		0.953										0.022		0.053	††	0.002		0.166	

Lab. Code #	Method Codes	Reported data on plant Calcium (%Ca w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.024	††	1.95	††	0.539		1.45	††	0.382		0.013	†	0.813		0.863		0.599		0.444		0.027		0.67	
L005	GI-23	0.065	††	2.06	††	0.723	††	1.84	††	0.445	†	0.005		0.869		0.948		0.519		0.374		0.023	†	0.552	
L007	AD-09	0.046		1.67		0.545		1.34		0.388		0.008		0.836		0.895									
L009	GJ-23	0.049		1.47		0.481		1.22		0.334		0.007		0.809		0.891		0.496		0.403		0.032		0.555	
L011	GJ-23	0.041		1.43		0.441		1.14		0.325		0.006		0.659		0.75	†	0.609		0.496		0.038	†	0.635	
L012	GE-11	0.065	††	1.67		0.558		1.36		0.458	††	0.012	†	1.01	††	1.06	††	0.696	††	0.524	††	0.05	††	0.739	
L013	DN-23	0.049		1.52		0.534		1.15		0.413		0.005		0.859		0.946		0.577		0.438		0.032		0.693	
L016	GI-23	0.046		1.46		0.496		1.13		0.392		0.006		0.859		0.908		0.548		0.435		0.032		0.644	
L017	DE-23	0.05		1.52		0.54		1.21		0.389		0.002		0.8442		0.915		0.59		0.45		0.03		0.71	
L018	GJ-23	0.048		1.56		0.525		1.24		0.425		0.005		0.89		0.947		0.569		0.434		0.032		0.773	
L019	AE-24	0.051		1.41		0.543		1.1		0.376		0.015	††	0.791		0.851		0.547		0.416		0.032		0.634	
L022	DE-23	0.046		1.52		0.512		1.17		0.381		0.005		0.849		0.902		0.538		0.426		0.032		0.632	
L023	DN-23	0.047		1.51		0.495		1.2		0.371		0.004		0.794		0.839		0.489		0.386		0.028		0.568	
L024	AD-23									0.1	††	0.01		0.11	††	0.1	††								
L026	GI-23	0.045		1.34		0.48		1.12		0.37		0.006		0.791		0.865		0.519		0.412		0.028		0.593	
L028	DE-23	0.052		1.62		0.499		1.31		0.411		0.01		0.911		0.934		0.516		0.404		0.03		0.599	
L030	GJ-23	0.041		1.38		0.462		0.70	††	0.347		0.004		0.773		0.838		0.454		0.326	†	0.023	†	0.455	††
L032	GG-23	0.046		1.33		0.465		1.06		0.351		0.007		0.72		0.775		0.492		0.369		0.029		0.541	
L034	GG-23	0.054		1.52		0.466		1.17		0.376		0.015	††	0.754		0.834		0.515		0.4		0.022	†	0.644	
L035	AB-11	0.033	††	1.48		0.47		1.07																	
L036	DE-23	0.047		1.57		0.524		1.23		0.397		0.006		0.851		0.881		0.561		0.424		0.033		0.679	
L042	GF-14	0.05		1.41		0.47		1.19		0.39		0.003		0.82		0.89		0.51		0.35		0.01	††	0.66	
L044	GG-23	0.052		1.57		0.527		1.16		0.322	†	0.007		0.684		0.816		0.265	††	0.273	††	0.02	††	0.393	††
L045	GI-23	0.05		1.5		0.48		1.18		0.4		0.004		0.79		0.88		0.51		0.41		0.03		0.58	
L064	GJ-11	0.04		1.34		0.465		0.83	††	0.36		0.053	††	0.081	††	0.883		0.513		0.482		0.044	††	0.549	
L079	GJ-23	0.046		1.66		0.463		1.27		0.383		0.005		0.785		0.871		0.544		0.408		0.033		0.666	
L080	GJ-13									0.32	†	0.02	††	1.12	††	1.048	††								
L097	DE-23	0.054		1.61		0.511		1.18		0.395		0.009		0.881		0.922		0.55		0.439		0.032		0.657	
L133	GG-23									0.389		0.006		0.86		0.912		0.528		0.399		0.029		0.62	
L135	DN-23	0.048		1.40		0.47		1.11		0.401		0.006		0.869		0.936		0.589		0.447		0.033		0.657	
L139	AD-23	0.052		1.49		0.522		1.17		0.38		0.005		0.802		0.88		0.572		0.47		0.035		0.685	
L142	Not Specified	0.04		1.22	†	0.43		0.99		0.36		0.01		0.72		0.86		0.41	†	0.31	††	0.02	††	0.45	††
L156	GI-23	0.065	††	1.37		0.448		1.09		0.38		0.041	††	0.764		0.779		0.489		0.361		0.062	††	0.59	
L159	DE-23	0.047		1.54		0.532		1.14										0.55		0.43		0.032		0.634	
L164	GJ-32									0.521	††	0.091	††	1.36	††	1.44	††								
L900	GE-11									0.449	†	0.007		0.979		1.08	††								

Lab. Code #	Method Codes	Reported data on plant Carbon (%C w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	40.1		41.5		52.8		40.8		38.2		39.4		43.4		41		41.6		47.7		39.8		36.5	
L011	CA-21	51.9	††	49.6		53.2		47.1	††																
L013	CA-37	46.6		46.8		57.8		44.7		44.1		46.3		49.3		46.5		48.1	††	54.1	††	47.1		43.8	
L018	CA-37	41.7		45.2		55		42.7		43.5		39.7		46.1		43.9		44.5		50.5		43.4		45	††
L019	CA-37	42.2		43.6		55.4		43		38.6		39.6		43.6		41.1		43.9		50.4		42.1		38.7	
L022	CA-37	42.7		43.1		61.8	††	42.7		40.8		41.8		43.8		42.9		43.5		49.8		42.8		39.9	
L023	CA-37	42.8		43.3		53.8		41.4		38.1		39.4		43.2		40.7		40.6		46.9		39		35.9	
L028	CA-37									39.4		42.3		45.6		42.1		41.5		46.2	††	38.9		36.3	
L032	CA-37	40		41.3		52.3		41		38.2		39		43.1		40.6		41.7		47.8		40		36.7	
L036	CA-37	42.2		44.1		54.5		42		38.4		40		43.8		40.7		42.4		49.3		42.2		39.7	
L042	CA-37	44.9		45.5		56.1		43		40.6		43.4		46.2		43.9		44.1		50.1		43.4		40.7	
L046	CA-37	40		41.5		53.8		40.7		46.3		47.8		53.1	††	49.8	††	43.8		48.9		42.3		41	
L079	CA-37	43		44.2		54.6		42.1		40.6		42.6		45.7		43.2		43.2		49.5		41.7		39.6	
L097	CA-37	43.9		43.4		54.5		41.9		41.2		43.1		46.6		43.9		43.6		50.2		43.5		40.4	
L156	CA-37	45.4		45.5		58		43.1		40.7		42.6		45.1		42.8		44.3		49.9		43.2		40.5	

Lab. Code #	Method Codes	Reported data on plant Chloride (%Cl w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	BB-32	0.147	††	0.621	††	0.176		1.13	††	0.827		0.0499		0.33		0.865		0.685		0.165		0.050	††	0.016	††
L011	BB-31	0.052		0.82		0.218		1.66		0.666		0.042		0.339		0.755		0.683		0.142		0.058	††	0.251	
L013	CA-27	0.06		0.87		0.23		1.72		0.725		0.04		0.25		0.835		0.72		0.16		0.12		0.29	
L016	BA-23	0.053		0.808		1.66	††	0.226	††	0.687		0.0371		0.262		0.804		0.715		0.154		0.108		0.262	
L017	BB-31	0.058		0.814		0.239		1.6		0.599		0.0436		0.489	††	0.732									
L018	BA-32	0.064		0.872		0.222		1.66		0.794		0.04		0.247		0.862		0.785		0.178		0.141		0.349	
L019	BB-32	0.249	††	0.625	††	0.225		1.87		0.578		0.093	††	0.14		0.712		0.788		0.21	††	0.105		0.334	
L022	BB-31	0.053		0.855		0.241		1.72		0.73		0.035		0.24		0.84		0.751		0.161		0.115		0.289	
L023	BB-38	0.053		0.878		0.228		1.65		0.667		0.0289		0.152		823	††	0.695		0.159		0.115		0.283	
L026	BB-31	0.064		0.786		0.20		1.54		0.75		0.041		0.267		0.814		0.678		0.15		0.098		0.262	
L028	BB-31	0.07		0.85		0.21		1.76		0.73		0.04		0.23		0.81		0.67		0.14		0.1		0.23	
L030	BB-31	0.052		0.745		0.204		1.51		0.67		0.03		0.21		0.665	††								
L034	BA-32	0.063		0.898		0.234		1.8		0.713		0.033		0.241		0.832		0.735		0.151		0.113		0.297	
L035	AB-11									0.001	††	0.001	††	0.001	††	0.001	††								
L036	EB-36	0.063		0.898		0.296	††	1.58		0.636		0.033		0.292		0.867		0.758		0.165		0.116		0.258	
L045	GI-23									0.89		0.28	††	0.73	††	0.97	†	1.13	††	0.23	††	0.47	††	0.7	††
L064	BB-27	0.086	††	0.894		0.236		1.94		0.742		0.041		0.304		0.85		0.721		0.106	††	0.124		0.296	
L097	BA-32	0.059		0.862		0.222		1.71		0.732		0.032		0.241		0.826		0.731		0.156		0.118		0.283	
L133	BB-28									0.767		0.033		0.222		0.838		0.713		0.135		0.093		0.233	
L135	BB-32	0.04		0.92		0.3	††	1.9		0.74		0.037		0.195		0.798		0.683		0.15		0.09		0.235	
L139	BB-31	0.057		0.846		0.245		1.82		0.667		0.032		0.361		0.735		0.701		0.162		0.097		0.296	
L159	BB-32	0.044		0.88		0.21		1.71										7.68	††	0.188		0.163	†	0.298	

Lab. Code #	Method Codes	Reported data on plant Cobalt (mg Co/kg)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.042	††	0.224		0.065		0.726		0.054	†	0.064	†	0.168		0.305		0.065		0.074		0.009		0.032	
L011	GJ-23	0.067	††	0.251		0.128	††	0.863		0.129	††	0.061	†	0.052	††	0.062	††	0.0631		0.11	†	0.105	††	0.121	††
L013	DN-23	0.014		0.254		0.071		0.774		0.024		0.017		0.189		0.351		0.089	†	0.085		0.005		0.039	
L016	GJ-24	0.009		0.251		0.069		0.859		0.022		0.019		0.176		0.3		0.070		0.078		0.007		0.038	
L017	DE-23	0.01		0.16	††	0.01	††	0.67		0.03		0.14	††	0.3	††	0.48	††	0.001	††	0.14	††	0.06	††	0.06	
L019	AE-24	0.018		0.266		0.075		0.893		0.089	††	0.06	†	0.199		0.3		0.068		0.084		0.007		0.050	
L022	DE-24	0.02		0.245		0.084		0.825		0.03		0.028		0.185		0.31		0.07		0.09		0.01		0.043	
L023	DN-24	0.011		0.258		0.073		0.8		0.028		0.017		0.175		0.305		0.071		0.079		0.006		0.042	
L024	AD-03									0.005	†	0.006				0.351		0.407	††	0.705	††	0.296	††	0.731	††
L026	GI-24	0.01		0.26		0.072		0.91		0.024		0.023		0.2		0.325		0.074		0.086		0.009		0.044	
L028	DE-24	0.014		0.259		0.077		0.836		0.029		0.02		0.19		0.313		0.072		0.077		0.007		0.039	
L030	DE-24	0.012		0.289		0.076		0.995		0.035		0.023		0.19		0.321		0.075		0.08		0.363	††	0.047	
L032	GG-24	0.021		0.262		0.074		0.866		0.053	†	0.042		0.201		0.318		0.073		0.078		0.0231	†	0.041	
L034	GG-23	0.033	†	0.182	††	0.041	††	0.651		0.02		0.109	††	0.205		0.434	††	0.068		0.048	††	0.026	†	0.06	
L079	GJ-24	0.013		0.224		0.042	††	0.611		0.037		0.019		0.217		0.388	†	0.079		0.094		0.013		0.056	
L097	DE-24	0.014		0.246		0.063		0.82		0.025		0.022		0.184		0.316		0.063		0.08		0.006		0.04	
L133	GG-23									0.704	††	0.772	††	0.763	††	0.763	††								
L135	DN-23	0.024		0.282		0.102	††	0.851		0.028		0.027		0.197		0.384	†	0.077		0.11	†	0.022	†	0.054	
L139	AD-23	0.009		0.218		0.076		0.698		0.017		0.028		0.205		0.252	†	0.058		0.08		0.010		0.038	
L159	DE-23	0.003		0.212	†	0.062		0.688										0.022	††	0.117	††	0.106	††	0.031	

Lab. Code #	Method Codes	Reported data on plant Copper (mg Cu/kg)																					
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*					
		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	0.3	††	7.55		9.15	††	5.4		6.8	††	4.4	††	8.75		5.5	†	9.5		7.2		2.53	†	2.17	
L005	GI-23	6.38		10.3		3.81		7.77		8.84		3.88	††	8.28		6.55		8.9		7.43		3.77		2.58	
L007	AD-13	0.75	††	10.4		3		6.2		6.5	††	1.75	†	10.0		9.08	††								
L009	GJ-23	6.74	††	8.94		4.05	††	7.3		9.46		4.08	††	9.13		7.48		9.64		7.11		4.31		3.23	
L011	GJ-23	5.4		8.46		2.7		6.21		9.04		2.56		8.86		6.56		10	†	8.15		5.18	††	4.42	††
L013	DN-23	5.36		8.46		2.82		5.82		9.83		2.66		8.81		6.8		8.38		6.05		3.69		2.67	
L016	GI-23	5.69		8.87		3.22		6.41		10.1		2.75		10		7.15		9.22		7.08		4.03		2.8	
L017	DE-23	4	††	7		1	††	4	††	8		1.3	††	8		7		8.61		6.29		3.62		2.59	
L018	GJ-23	6.09		9.21		3.26		6.73		10.6		2.84		9.69		7.81		8.88		6.08		4.37		3.37	
L019	AE-24	5.19		8.9		3.57		7.41		16.9	††	8.66	††	8.07		5.94		8.47		5.94		4.3		2.45	
L022	DE-23	5.7		8.89		3.15		6.44		10		2.8		10.2		7.3		8.65		6.91		3.96		2.82	
L023	DN-23	5.68		8.81		2.93		5.88		9.43		3.1		8.94		6.7		7.68	†	5.7		3.45		2.31	
L024	AD-23									7.36		0.72	††	8.07		8.78	††	16.5	††	11.9	††	4.78		7.11	††
L026	GI-23	5.32		7.53		2.7		5.76		9.52		2.53		9.09		6.75		8.68		6.42		3.76		2.53	
L028	DE-23	5.5		9.5		2.9		6.9		10.6		2.7		10.4		7.6		9		7.1		3.9		3.2	
L030	GJ-23	5.03		7.97		2.76		4.62		8.2		2.23		8.22		6.31		6.85	††	4.83		2.8		1.84	
L032	GG-23	5.42		8.32		3.16		6.38		9.1		2.42		8.7		6.62		7.99		5.97		3.51		2.37	
L034	GG-23	5.49		8.71		2.76		6.08		9.35		1.94	†	8.34		5.87		7.99		5.88		3.16		2.24	
L035	AB-11	4.46		10.2		5.19	††	7.06																	
L036	DE-23	5.65		9.18		3.34		6.7		10.1		2.66		10.1		7.75		8.66		6.3		4.81		2.82	
L044	GG-23	4.96		7.66		3.02		6.48		7.97		3.24	†	7.68		6.43		4.84	††	4.28	††	2.32	††	1.88	
L045	GI-23	6.3		9.19		3.4		7.18		10		2.61		9.02		7.24		9.47		6.93		4.26		3.3	
L064	GJ-11	4.34	†	8.03		1.86	††	5.57		8.77		2	†	10.2		7		12.5	††	9.31	††	4.1		2.56	
L079	GJ-23	5.67		9.54		2.88		6.29		9.77		2.59		9.13		6.86		10.1	†	6.82		4.6		3.26	
L080	GJ-13									10.5		7.3	††	10		10.5	††								
L097	DE-23	4.92		9.51		2.53		5.69		10.4		2.85		9.78		7.18		8.56		6.64		3.97		2.81	
L133	GG-23									8.59		2.71		9.33		6.95		8.82		6.11		3.73		2.77	
L135	DN-23	5.5		8		3.2		6.2		8.94		2.53		8.63		6.81		8.78		6.22		3.65		2.43	
L139	AD-23	0.22	††	7.97		2.99		4.68		7.1		3.87	††	9.46		5.11	††	7.33	†	6.45		2.56	†	2.6	
L142	Not Specified	4	††	7		2	††	5		9.78		2.73		9.17		7.06		8.89		6.68		3.48		4.24	††
L156	GI-23	5.34		8.71		3.14		6.17		9.82		3		10.1		7.25		8.76		6.2		3.91		3.04	
L159	DE-23	5.38		7.85		2.8		5.36										5.8	††	1.84	††	3.52		2.17	

Lab. Code #	Method Codes	Reported data on plant Iron (mg Fe/kg)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	31.5		206		96.7	††	312		24.2		33.6	††	354	††	3060	††	103		86.5		22.7		46.2	††
L005	GI-23	13.8	††	173		57.8		280		23.1		4.92		180		575		81.7		109	†	4.52	††	36.8	
L007	AD-13	32.3		174		55.5		262		16.8		3.5		114	†	458									
L009	GJ-23	51.5	††	182		78.1	††	273		24.1		11.4	†	164		512		130	†	110	†	35.8	††	47.5	††
L011	GJ-23	15.1	††	172		41.1	††	305		22		6.63		187		584		115		121	††	43.3	††	54	††
L013	DN-23	34.2		187		57.7		267		14.2		2.61		142		537		92.9		87.3		24.7		35	
L016	GJ-23	33.2		193		58.6		294		16.8		5.23		167		536		93.8		92.3		25.8		32.8	
L017	DE-23	33		191		61		291		17		16	††	180		579		109		106		29.3		38.1	
L018	GJ-23	34.5		206		61.5		335		20.1		7.43		189		588		108		102		28		42.6	†
L019	AE-24	40	†	182		60.3		2.75	††	91.5	††	49	††	166		529		70.7		82.2		23		33.9	
L022	DE-23	34.8		182		58		287		18.2		4.5		173		530		99		100		27		36	
L023	DN-23	28.8		189		52.5		284		22		3.35		159		498		87.1		83.8		22.6		31.2	
L024	AD-23									16.9		8.56		158		499		180	††	141	††	44	††	102	††
L026	GI-23	31.2		162		53.4		251		16.3		3.35		158		479		87.2		87		24.5		31	
L028	DE-23	33.3		192		56		304		19.1		3.5		171		531		93.8		88.6		22.6		32.3	
L030	GJ-23	32		221		63		211		26		4.55		172		537		98.1		85.1		25		42.5	†
L032	GG-23	28.1		163		60.7		270		21.6		11.2	†	135		439		48.8	††	69.2		3.54	††	26.6	
L034	GG-23	30.1		154		48.7		243		16.8		3.02		131		467		83.2		79.1		23.7		31.8	
L035	AB-11	21.7	††	176		59.5		257																	
L036	DE-23	33.7		210		65.3		291		23		5.87		191		490		90.3		86.5		24.3		32	
L044	GG-23	38.6	†	176		61.1		292		20.8		14.2	††	140		430		48.2	††	62.6	††	19.7		26.6	
L045	GI-23	31.7		173		13.7	††	53.6	††	19		5.25		137		482		57.7	†	81.3		24.5		33.2	
L064	GJ-11	18.4	††	192		50.7		294		17.7		3.02		185		555		104		80.5		27		40	
L079	GJ-23	31.5		212		50.7		279		16.9		2.9		153		509		101		84		25.2		33.3	
L080	GJ-13									26		6		164		533									
L097	DE-23	36		199		58.6		299		22.7		8.22		165		556		98.3		91		23.3		31.1	
L133	GG-23									17.4		3.49		151		482		93.9		84.3		22.7		33.7	
L135	DN-23	34		160		51		240		20.1		4.06		157		507		100		98		29.8		35.3	
L139	AD-23	32.2		113	††	49.7		146	††	13.4		3.23		91.3	††	281	††	98		66.4		20.6		23.9	†
L142	Not Specified	27	†	150		48		241		24.4		8.58		187		558		50.1	††	48.2	††	12.6	††	19.9	††
L156	GI-23	32.6		156		56.1		240		22.1		6.27		152		447		69.7		85.1		28.8		37.6	
L159	DE-23	32.2		169		55.1		243										77.8		78.3		25.5		29.6	

Lab. Code #	Method Codes	Reported data on plant Lead (mg Pb/kg)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.163	††	0.122		0.264		0.266		0.132		0.137		0.29		0.4		0.157		0.218		0.064		0.062	
L011	DE-23	0.151	††	0.28	††	0.414	††	0.545	††	0.554	††	0.559	††	0.928	††	0.898	††	0.043		0.235		0.024		0.045	
L013	DN-23	0.011		0.093		0.17		0.208		0.037		0.004		0.222		0.337		0.11		0.214		0.009		0.045	
L019	AE-24	0.062		0.177		0.171		0.268		0.046		0.058		0.159		0.185		0.075		0.083	††	0.024		0.068	
L022	DE-24	0.025		0.14		0.145		0.23		0.088		0.025		0.28		0.365		0.09		0.225		0.003		0.04	
L023	DN-24	0.004		0.117		0.133		0.228		0.044		0.001		0.178		0.429		0.097		0.202		0.003		0.026	
L024	AD-03									0.165	†	0.142	†	0.316		0.346		2.02	††	2.17	††	1.98	††	2.39	††
L028	DE-24	0.31	††	0.31	††	0.31		0.31		0.05		0.001		0.3		0.42		0.12		0.24		0.02		0.05	
L030	DE-24	0.004		0.106		0.138		0.239		0.041		0.008		0.431		0.354		0.086		0.199		0.005		0.029	
L032	GG-24	0.059		0.16		0.169		0.298		0.117		0.075		0.283		0.448		0.127		0.216		0.032		0.048	
L079	GJ-24	0.014		0.001		0.067		0.089	††	0.07		0.071		0.304		0.524		0.111		0.074	††	0.087		0.132	††
L133	GG-02									0.014		0.001		0.221		0.404		0.055		0.293		0.072		0.124	††
L159	DE-23	0.018		0.104		0.2		0.226										0.063		0.001	††	0.001		0.064	

Lab. Code #	Method Codes	Reported data on plant Magnesium (%Mg w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.162	††	0.263	†	0.288		0.692		0.144		0.02		0.265		0.151		0.199		0.063		0.08		0.12	
L005	GI-23	0.259	††	0.462	††	0.523	††	1.6	††	0.145		0.026		0.315	††	0.168	††	0.197		0.084	††	0.1		0.138	
L007	AD-13	0.15	†	0.263	†	0.281		0.754		0.144		0.031	††	0.27		0.151									
L009	GJ-23	0.127		0.186	†	0.221		0.627		0.118		0.02		0.223		0.125		0.161		0.063		0.083		0.101	
L011	GJ-23	0.092	††	0.154	††	0.167	††	0.482	††	0.123		0.019		0.239		0.135		0.183		0.069		0.087		0.121	
L012	GE-11	0.132		0.223		0.228		0.648		0.138		0.023		0.269		0.156		0.205	†	0.075		0.097		0.139	
L013	DN-23	0.128		0.22		0.246		0.635		0.128		0.02		0.257		0.137		0.176		0.063		0.083		0.119	
L016	GI-23	0.132		0.216		0.247		0.649		0.129		0.021		0.261		0.136		0.185		0.07		0.091		0.12	
L017	DE-23	0.13		0.22		0.26		0.68		0.127		0.019		0.256		0.139		0.19		0.07		0.08		0.12	
L018	GJ-23	0.139		0.239		0.271		0.724		0.147		0.022		0.277		0.151		0.198		0.074		0.095		0.15	††
L019	AE-24	0.136		0.236		0.26		0.737		0.139		0.026		0.261		0.134		0.189		0.07		0.092		0.123	
L022	DE-23	0.135		0.225		0.25		0.701		0.132		0.021		0.268		0.139		0.181		0.07		0.089		0.12	
L023	DN-23	0.13		0.223		0.246		0.663		0.125		0.019		0.246		0.135		0.154	†	0.062		0.078		0.108	
L024	AD-23									0.08	††	0.01	††	0.12	††	0.08	††	0.13	††	0.06		0.07		0.09	††
L026	GI-23	0.132		0.203		0.251		0.679		0.127		0.020		0.252		0.134		0.176		0.066		0.083		0.113	
L028	DE-23	0.136		0.236		0.25		0.721		0.14		0.022		0.282		0.146		0.172		0.065		0.08		0.115	
L030	GJ-23	0.126		0.221		0.24		0.547		0.117		0.019		0.236		0.127		0.153	†	0.054		0.069		0.087	††
L032	GG-23	0.126		0.198		0.233		0.613		0.122		0.019		0.237		0.124		0.172		0.062		0.078		0.105	
L034	GG-23	0.135		0.214		0.242		0.623		0.124		0.018		0.229		0.126		0.175		0.063		0.085		0.123	
L035	AB-11	0.12		0.21		0.23		0.63		0.13		0.02		0.26		0.14									
L036	DE-23	0.132		0.23		0.257		0.685		0.132		0.022		0.263		0.134		0.187		0.067		0.088		0.129	
L042	GF-09	0.12		0.21		0.23		0.7		0.14		0.02		0.28		0.16	†	0.18		0.06		0.08		0.12	
L044	GG-23	0.1	††	0.165	††	0.187	††	0.569		0.105		0.023		0.202	††	0.12		0.083	††	0.043	††	0.05	††	0.069	††
L045	GI-23	0.14		0.23		0.26		0.72		0.14		0.02		0.25		0.14		0.18		0.07		0.09		0.12	
L064	GJ-11	0.114	†	0.228		0.248		0.65		0.123		0.025		0.243		0.143		0.176		0.076		0.089		0.133	
L079	GJ-23	0.132		0.24		0.234		0.689		0.136		0.022		0.257		0.141		0.184		0.067		0.092		0.127	
L080	GJ-13									0.111		0.01	††	0.312	†	0.129									
L097	DE-23	0.137		0.229		0.257		0.705		0.13		0.023		0.266		0.14		0.185		0.07		0.09		0.123	
L133	GG-23									0.125		0.022		0.266		0.138		0.181		0.062		0.079		0.126	
L135	DN-23	0.12		0.19	†	0.203		0.62		0.124		0.022		0.251		0.133		0.181		0.068		0.087		0.116	
L139	AD-23	0.14		0.225		0.258		0.708		0.13		0.02		0.257		0.133		0.182		0.07		0.093		0.125	
L142	Not Specified	0.11	†	0.22		0.25		0.58		0.12		0.02		0.22	†	0.14		0.16		0.06		0.07		0.09	††
L156	GI-23	0.13		0.229		0.238		0.644		0.149		0.02		0.28		0.145		0.195		0.068		0.084		0.137	
L159	DE-23	0.543	††	0.142	††	0.214		0.261	††									0.21	†	0.081		0.104		0.126	
L164	GJ-32									0.152		0.015		0.356	††	0.286	††								
L900	GE-11									0.147		0.026		0.282		0.151									

Lab. Code #	Method Codes	Reported data on plant Manganese (mg Mn/kg)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	41.5	††	61.7	††	593		187		14.5		9.4		231		82.8		59.4		97.9		13.1	†	28.5	
L005	GI-23	49.5		40		529		163		16.3		11.2	†	280	††	99.7		74.5	††	126	†	11.3		29.4	
L007	AD-13	55.8		46.3		516		175		12.3		7.5	††	204		84.3									
L009	GJ-23	52.1		37.9		459		151		13.2		9.75		218		78.5		58.5		102		10.1		23.1	
L011	GJ-23	53.8		44.7		478		169		12.5		8.23	†	199		78.7		61.3		103		9.98		25.5	
L013	DN-23	54		41.5		483		151		13.8		10.1		231		85.5		58.9		98.2		9.71		24.6	
L016	GI-23	55.3		43.3		520		168		14.4		10.5		244		87.6		63		113		10.3		26.1	
L017	DE-23	53		41		537		158		13		8	††	244		89		65.6		113		10.3		25.7	
L018	GJ-23	59		44.7		556		175		15.9		10.7		257		89.7		65		115		10.7		30.8	
L019	AE-24	53.9		45.8		470		178		24.5	††	9.09		217		63.7	††	60.1		100		10		24.8	
L022	DE-23	57		43		525		167		14.4		9.8		245		86		60		105		10.3		25	
L023	DN-23	56.9		45.9		512		178		14.1		9.13		237		81.4		57.6		99.7		9.05		23.6	
L024	AD-23									13.11		9.35		232		81.4		136	††	181	††	14.8	††	77.8	††
L026	GI-23	54.8		38.6		487		154		13.7		9.73		233		83.9		58.9		102		9.74		23.7	
L028	DE-23	54.7		44.3		511		174		15.1		9.91		254		88.2		56.6		96.9		8.53		23.1	
L030	GJ-23	49.2		47.1		486		128	††	12.6		8.89		214		78		50		84		7.75		18.4	††
L032	GG-23	51.3		39.7		485		155		13.4		9.09		208		78.3		54.1		91.8		8.26		20.6	
L034	GG-23	50		39.5		455		156		15.1		9.32		216		78.5		58		93.8		9.37		25.2	
L035	AB-11	38.3	††	44.8		535		169																	
L036	DE-23	55.4		46.5		541		178		15		10.1		244		83.3		61.4		101		9.81		27.3	
L044	GG-23	56.2		45		526		160		11.1		9.36		279	††	71.5		43.7	††	106		7.56		17	††
L045	GI-23	51.5		45.4		491		171		16.2		9.72		225		86		56.6		101		8.85		22.5	
L064	GJ-11	41.7	††	39.4		463		156		12.9		4.15	††	238		84.8		58.2		106		12		26.1	
L079	GJ-23	54.3		47.8		463		168		14.8		9.96		237		84.5		65.6		112		11		28	
L080	GJ-13									18	††	9.7		260		94									
L097	DE-23	53		44.8		540		172		14.6		10.5		243		85.3		62.5		111		9.92		25.4	
L133	GG-23									13.4		9.64		227		79.4		62.9		97.7		9.06		24.6	
L135	DN-23	58		38		495		155		15.0		10.78		256		93		66		115		10.8		26.4	
L139	AD-23	59.5		41.8		515		163		13.6		10.1		232		77.2		58.8		113		10.8		26.2	
L142	Not Specified	45	†	38		429		147		15.9		10.4		270		103	††	57.4		95.5		9.42		21.8	
L156	GI-23	69.8	††	58.6	††	475		164		13.5		9.7		228		79.5		66.8		107		17.4	††	32.2	††
L159	DE-23	52		38.3		500		144										62.8		112		10.3		23.6	

Lab. Code #	Method Codes	Reported data on plant Molybdenum (mg Mo/kg)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.17		0.134	††	0.089	†	0.195	††	0.148	††	0.867		0.712		0.223		1.68	††	0.544	††	0.424	††	0.605	††
L011	GJ-23	0.336	††	0.605	††	0.305	††	1.65		0.411	††	1.07	††	1.02	††	0.46	††	0.399	††	0.468	†	0.428	††	0.58	††
L013	DN-23	0.125		0.357		0.013		1.41		0.024		0.883		0.729		0.184		0.213		0.213		0.198		0.333	
L016	GJ-24	0.13		0.387		0.019		1.57		0.028		0.772		0.727		0.185		0.206		0.209		0.186		0.326	
L017	DE-23	0.14		0.24		0.01		1.19		0.01		0.44	††	0.33	††	0.01	††	0.94	††	0.81	††	0.73	††	0.92	††
L019	AE-24	0.194		0.558	†	0.063		1.65		0.11	††	0.768		0.846		0.307		0.243		0.296		0.202		0.338	
L022	DE-24	0.135		0.384		0.024		1.44		0.03		0.824		0.74		0.19		0.212		0.235		0.189		0.335	
L023	DN-24	0.118		0.39		0.022		1.5		0.029		0.75		0.705		0.178		0.189		0.185		0.164		0.293	
L024	AD-23									0.054		0.604	††	0.683		0.117		0.77	††	0.57	††	0.934	††	1.26	††
L026	GI-24	0.13		0.43		0.04		1.65		0.045		0.85		0.84		0.215		0.235		0.235		0.2		0.36	
L028	DE-24	0.17		0.4		0.17	††	1.47		0.02		0.83		0.75		0.18									
L030	DE-24	0.209		0.473		0.074		1.76		0.004		0.756		0.732		0.178		0.242		0.247		0.192		0.351	
L032	GG-24	0.167		0.431		0.062		1.72		0.082		0.852		0.883		0.259		0.267		0.296		0.223		0.323	
L034	GG-23	0.36	††	0.382		0.142	††	1.26		0.043		0.94		0.591		0.151		0.359	†	0.392		0.349	††	0.467	†
L079	GJ-24	0.096		0.328		0.001		1.07		0.022		0.786		0.767		0.189		0.233		0.18		0.175		0.374	
L097	DE-24	0.129		0.41		0.02		1.42		0.048		0.816		0.797		0.207		0.218		0.212		0.183		0.361	
L133	GG-23									0.029		0.851		0.663		0.115		0.202		0.164		0.163		0.191	††
L135	DN-23	0.105		0.33		0.01		1.36		0.015		0.811		0.682		0.138		0.174		0.179		0.159		0.28	
L139	AD-23	0.029	†	0.287		0.014		1.04		0.01		0.818		0.627		0.151		0.207		0.257		0.166		0.305	
L159	DE-23	0.122		0.388		0.034		1.27										0.168		0.3		0.195		0.307	

Lab. Code #	Method Codes	Reported data on plant Nitrogen (%N w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	2.11		3.05		2.11	††	4.26	††	1.75	††	1.47	††	2.24		1.96									
L007	GE-38	2.03		2.79		1.6		4.79		1.53		1.28		2		1.81									
L009	CA-37	1.91		2.7		1.53		4.84		1.45		1.2		2.04		1.82		1.63		1.78		1.18		1.76	
L011	CA-37	1.94		2.78		1.5		4.94		1.32		1.25		2.17		1.93		1.8		1.97		1.3		1.96	
L012	GE-30	2.4	††	2.79		1.97	††	4.65		1.54		1.27		2.7	††	2.06		1.5		1.71		1.26		1.75	
L013	CA-37	2.17		3.02		1.71		5.2		1.6		1.35		2.23		1.98		1.75		2		1.37		2.07	
L016	CA-37	1.95		2.8		1.62		5.03		1.52		1.25		2.11		1.95		1.66		1.83		1.21		1.86	
L017	GF-31	1.77		2.55	†	1.39		3.87	††	1.4		1.25		1.98		1.84									
L018	CA-37	2.13		2.92		1.65		5.09		1.67		1.35		2.32		2.1		1.86		2.09		1.35		2.05	
L019	CA-37	1.99		2.86		1.59		5		1.41		1.14		1.97		1.76		1.69		1.87		1.24		1.89	
L022	CA-37	1.97		2.83		1.58		4.96		1.49		1.23		2.11		1.84		1.66		1.86		1.26		1.89	
L023	CA-37	2.11		2.89		1.69		4.86		1.51		1.27		2.02		1.78		1.5		1.71		1.2		1.72	
L024	GE-32									1.33		1.13		1.88		1.62									
L026	GE-31	2.01		2.89		1.61		5.05		1.55		1.29		2.23		1.95		1.61		1.89		1.28		1.88	
L028	GE-31	2.04		2.86		1.45		4.61		1.48		1.25		1.92		1.83		1.39	††	1.72		1.15		1.72	
L030	CA-37	1.92		2.83		1.52		4.84		1.39		1.16		1.99		1.73		1.52		1.79		1.17		1.75	
L032	CA-37	1.89		2.74		1.5		4.86		1.45		1.21		2.07		1.78		1.6		1.82		1.22		1.79	
L034	GE-31	1.86		2.57		1.42		4.43	†	1.39		1.17		1.96		1.74		1.46		1.78		1.21		1.73	
L035	AB-11	2		3.14	††	1.68		4.66		1.35		1.17		1.98		1.61		1.6		1.8		1.23		1.67	
L036	CA-37	2.13		2.92		1.74		4.96		1.48		1.28		2.15		1.85		1.57		1.97		1.33		1.98	
L042	CA-37	2.11		2.94		1.63		5.04		1.47		1.26		2.09		1.93		1.7		1.87		1.28		1.97	
L044	GG-32	1.9		2.58		1.39		4.17	††																
L045	CA-37	1.89		2.79		1.55		4.94		1.53		1.22		2.05		1.93		1.71		1.88		1.2		1.84	
L046	CA-37	1.89		2.80		1.50		5.11		1.39		1.15		1.98		1.75		1.66		1.93		1.43		1.95	
L064	GE-30	2.05		2.76		1.46		4.58		1.45		1.26		2.09		1.83		1.59		1.98		1.17		1.78	
L079	CA-37	2.06		2.98		1.65		4.97		1.52		1.27		2.15		1.94		1.67		1.88		1.27		1.92	
L097	CA-37	2.11		2.97		1.64		4.92		1.65		1.39		2.27		1.97		1.76		1.97		1.42		2.1	
L133	BB-38									0.003	††	0	††	0	††	0.008	††								
L135	CA-37	1.91		2.76		1.57		4.86		1.451		1.19		2.03		1.841		1.84		2.04		1.41		1.98	
L139	CA-37	2.03		2.82		1.64		5.01		1.52		1.27		2.11		1.87		1.68		1.95		1.33		1.92	
L142	Not Specified	2.07		2.73		1.6		4.75		1.28	†	1.12		1.8		1.6		1.39	††	1.62		1.11		1.59	
L156	CA-37	2.1		2.93		1.62		4.99		1.52		1.29		2.11		1.86		1.62		1.9		1.31		2	
L159	GF-32	2.08		2.88		1.57		4.76										1.62		1.86		1.32		1.91	
L164	GE-32											0.39	††	1.68	††	1.32	††								
L900	GE-30									1.91	††	1.33		2.76	††	1.97									

Lab. Code #	Method Codes	Reported data on plant Phosphorus (%P w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.392		0.221		0.104	††	0.324	††	0.228	††	0.15	††	0.232	††	0.229									
L005	GI-23	0.377		0.226		0.093	†	0.401		0.194		0.08		0.19		0.227		0.273	†	0.179		0.348		0.297	
L007	GE-30	0.383		0.223		0.083		0.354		0.178		0.095		0.164		0.204									
L009	GJ-23	0.386		0.221		0.084		0.377		0.18		0.097		0.173		0.206		0.243		0.169		0.315		0.26	
L011	GJ-23	0.387		0.21		0.075	†	0.358		0.194		0.108		0.017	††	0.213		0.234		0.164		0.31		0.266	
L012	GE-30	0.425		0.259	††	0.111	††	0.394		0.193		0.108		0.171		0.23		0.286	††	0.171		0.339		0.297	
L013	DN-23	0.406		0.226		0.084		0.36		0.185		0.108		0.179		0.219		0.244		0.164		0.327		0.275	
L016	GI-23	0.393		0.229		0.083		0.363		0.187		0.101		0.181		0.218		0.249		0.173		0.325		0.276	
L017	DE-23	0.379		0.231		0.086		0.375		0.178		0.095		0.176		0.209		0.258		0.176		0.31		0.28	
L018	GJ-23	0.401		0.243		0.089		0.382		0.207		0.107		0.188		0.229		0.256		0.177		0.334		0.329	†
L019	AE-24	0.391		0.242		0.083		0.399		0.181		0.09		0.175		0.202		0.243		0.167		0.315		0.27	
L022	DE-23	0.386		0.228		0.087		0.368		0.186		0.096		0.182		0.215		0.238		0.17		0.311		0.268	
L023	DN-23	0.397		0.231		0.084		0.378		0.178		0.095		0.177		0.207		0.218		0.152		0.279		0.245	
L024	AD-23									0.16	†	0.07	†	0.18		0.15	††								
L026	GI-23	0.379		0.217		0.087		0.375		0.185		0.095		0.177		0.212		0.234		0.165		0.298		0.256	
L028	DE-23	0.409		0.23		0.083		0.378		0.194		0.103		0.188		0.215		0.228		0.157		0.279		0.252	
L030	GJ-23	0.355		0.218		0.079		0.418	†	0.171		0.091		0.166		0.2		0.215		0.14	†	0.262	†	0.211	†
L032	GG-23	0.36		0.207		0.080		0.343	†	0.175		0.086		0.157	†	0.189		0.217		0.149		0.265		0.236	
L034	GG-23	0.395		0.234		0.086		0.38		0.192		0.093		0.176		0.216		0.244		0.161		0.312		0.284	
L035	AB-11	0.34	†	0.22		0.07	††	0.37		0.181		0.088		0.178		0.21									
L036	DE-23	0.377		0.236		0.085		0.375		0.191		0.104		0.182		0.211		0.242		0.16		0.323		0.285	
L042	GF-31	0.39		0.21		0.08		0.36		0.19		0.11		0.18		0.22		0.25		0.17		0.32		0.28	
L044	GG-23	0.36		0.227		0.083		0.384		0.153	††	0.094		0.142	††	0.189		0.139	††	0.12	††	0.205	††	0.193	††
L045	GI-23	0.37		0.22		0.08		0.38		0.18		0.1		0.17		0.21		0.23		0.16		0.3		0.25	
L064	GJ-30	0.358		0.21		0.084		0.34	†	0.179		0.119	†	0.18		0.215		0.24		0.2	††	0.302		0.26	
L079	GJ-23	0.373		0.248		0.071	††	0.379		0.189		0.089		0.176		0.208		0.244		0.164		0.315		0.277	
L080	GJ-30									0.181		0.094		0.173		0.208									
L097	DE-23	0.388		0.231		0.086		0.361		0.191		0.103		0.183		0.217		0.247		0.171		0.328		0.286	
L133	GG-23									0.172		0.101		0.174		0.208		0.212		0.156		0.291		0.242	
L135	DN-23	0.372		0.21		0.085		0.33	†	0.188		0.098		0.186		0.221		0.254		0.175		0.319		0.281	
L139	AD-23	0.323	††	0.208		0.088		0.305	††	0.198		0.092		0.202	††	0.235		0.225		0.158		0.323		0.245	
L142	Not Specified	0.1	††	0.04	††	0.1	††	0.1	††	0.12	††	0.06	††	0.12	††	0.15	††	0.17	††	0.11	††	0.21	††	0.16	††
L156	GI-23	0.403		0.243		0.098	††	0.369		0.196		0.105		0.194	†	0.218		0.233		0.168		0.297		0.267	
L159	DE-23	0.429		0.23		0.093	†	0.38										0.233		0.162		0.347		0.272	
L164	GK-30									0.181		0.086		0.17		0.207									
L900	GE-30									0.158	††	0.053	††	0.135	††	0.199									

Lab. Code #	Method Codes	Reported data on plant Potassium (%K w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.432		2.09	†	0.328		6.17		2.87		0.097		2.3	††	2.07	††								
L005	GI-23	0.448		2.38	††	0.396	††	7.27	††	2.4		0.088		1.79		1.53		1.34		0.614		0.329		2.53	
L007	GE-09	0.425		1.77		0.373	††	6.45	†	2.67		0.115		1.87		1.78									
L009	GJ-23	0.392		1.74		0.334		5.26		2.34		0.084		1.72		1.58		1.27		0.6		0.35		2.36	
L011	GJ-23	0.368		1.38	††	0.276		2.22	††	2.45		0.108		1.77		1.67		1.47		0.652		0.431		2.74	
L012	GE-11	0.43		1.74		0.313		4.9		2.51		0.119		1.96		1.76		1.47		0.689		0.365		2.38	
L013	DN-23	0.258	††	1.78		0.176	††	4.97		2.53		0.033	††	1.79		1.63		1.31		0.543		0.282	††	2.63	
L016	GI-23	0.356		1.87		0.288		5.47		2.62		0.097		1.9		1.7		1.44		0.702		0.387		2.73	
L017	DE-23	0.36		1.81		0.29		5.25		2.45		0.09		1.79		1.62		1.51		0.72		0.37		2.79	
L018	GJ-23	0.394		2.02		0.309		5.48		2.89	†	0.107		1.98		1.88		1.55		0.752		0.438		3.29	††
L019	AE-24	0.457		1.91		0.265		5.97		2.75		0.157	††	1.88		1.73		1.4		0.676		0.401		2.69	
L022	DE-23	0.376		1.86		0.296		5.47		2.57		0.099		1.84		1.7		1.45		0.758		0.4		2.66	
L023	DN-23	0.355		1.72		0.273		6.2		2.26		0.09		1.65		1.48		1.17		0.594		0.344		2.28	
L024	AD-09									1.43	††	0.094		1.13	††	1.07	††	0.71	††	0.42	††	0.25	††	1.07	††
L026	GI-23	0.383		1.73		0.29		5.38		2.48		0.098		1.92		1.65		1.41		0.672		0.38		2.52	
L028	DE-23	0.423		2.14	†	0.297		6.09		2.73		0.103		2		1.83		1.38		0.665		0.367		2.58	
L030	GJ-23	0.345		1.72		0.264		0.495	††	1.73	††	0.09		1.66		1.16	††	1.24		0.559		0.313		2.07	††
L032	GG-23	0.338		1.72		0.273		4.98		2.31		0.078		1.53	†	1.43	†	1.2		0.551		0.325		2.22	
L034	GG-23	0.377		1.88		0.29		4.77		2.43		0.093		1.72		1.6		1.51		0.697		0.418		2.95	
L035	AB-11	0.37		1.7		0.26		4.83																	
L036	DE-23	0.314		1.71		0.264		4.69		2.6		0.107		1.91		1.71		1.49		0.68		0.41		2.85	
L042	GF-09	0.39		1.8		0.3		5.25		2.51		0.12		1.82		1.629		1.5		0.73		0.43		2.79	
L044	GG-23	0.388		2.22	††	0.325		5.72		3.08	††	0.111		2.14	†	1.96	†	1.3		0.421	††	0.216	††	2.55	
L045	GI-23	0.37		1.84		0.28		5.48		2.58		0.1		1.79		1.65		1.33		0.67		0.39		2.54	
L064	GJ-11	0.4		1.78		0.304		3.13	††	2.35		0.106		3.04	††	1.58		1.3		0.835		0.44		2.51	
L079	GJ-23	0.36		2.09	†	0.261		5.76		2.39		0.1		1.74		1.62		1.41		0.654		0.397		2.74	
L080	GJ-13									2.71		0.509	††	2.34	††	2.08	††								
L097	DE-23	0.411		1.97		0.303		5.56		2.68		0.109		1.95		1.81		1.51		0.733		0.414		2.94	
L133	GG-23									2.58		0.099		1.90		1.7		1.55		0.698		0.42		2.67	
L135	DN-23	0.348		1.60		0.255		4.95		2.48		0.101		1.87		1.68		1.47		0.715		0.41		2.71	
L139	AD-23	0.337		1.84		0.28		5.26		2.48		0.083		1.85		1.68		1.48		0.692		0.368		2.9	
L142	Not Specified	0.33		2.35	††	0.08	††	4.8		2.65		0.16	††	2.11		2.1	††	1.52		0.79		0.42		2.2	
L156	GI-23	0.459		1.85		0.386	††	5.04		2.52		0.205	††	1.82		1.64		1.44		0.701		0.462		2.7	
L159	DE-23	0.346		1.77		0.296		5.16										1.71		0.738		0.435		2.65	
L900	GE-11									2.47		0.04	††	1.67		1.71									

Lab. Code #	Method Codes	Reported data on plant Selenium (mg Se/kg)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.034	††	0.042		0.059		0.036		0.074		0.007		0.043		0.032		0.10	††	0.067		0.032	††	0.054	†
L011	DE-23	0.16	††	0.262	††	0.555	††	0.186	††	0.261	††	0.146	††	0.363	††	0.097	††	0.422	††	0.079		0.001	††	0.324	††
L013	GJ-22	0.015		0.027		0.04		0.03		0.01		0.035		0.017		0.011		0.167		0.040		0.016		0.101	
L016	GJ-24	0.009		0.024		0.038		0.028		0.015		0.038		0.021		0.0172		0.189		0.052		0.015		0.112	
L019	AE-24	0.001	†	0.058		0.028		0.051		0.063		0.011		0.053		0.037		0.018	††	0.004	††	0.009	††	0.044	††
L022	DE-24	0.01		0.037		0.039		0.101	†	0.08		0.035		0.03		0.025		0.16		0.045		0.015		0.15	
L023	DN-24	0.008		0.022		0.033		0.028		0.013		0.034		0.014		0.0133		0.19		0.049		0.015		0.115	
L026	GI-24	0.01		0.05		0.045		0.04		0.022		0.040		0.028		0.0225		0.175		0.050		0.020	††	0.115	
L032	GG-24	0.015		0.051		0.062		0.111	†	0.042		0.046		0.041		0.0325		0.189		0.054		0.016		0.125	
L079	GJ-24	0.158	††	0.001		0.166	††	0.001		0.526	††	0.021		0.127	††	0.019									
L097	DE-24	0.009		0.034		0.036		0.05		0.019		0.042		0.023		0.014		0.197		0.058		0.019		0.148	
L133	AE-23									1.33	††	2.12	††	0.646	††	0.48	††								
L159	DE-23	0.069	††	0.123	††	0.462	††	0.133	††									0.0387	††	0.001	††	0.016		0.109	

Lab. Code #	Method Codes	Reported data on plant Silicon (%Si w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.004		0.037		0.035		0.034		0.003		0.002		0.076		0.196		0.219		0.011		0.01		0.004	
L011	ZZ-23	0.008		0.159	††	0.060		0.202		0.03	††	0.032		0.352		0.477		1.73		0.164		0.15	†	0.142	†
L019	AE-24	0.001		0.035		0.022		0.046		0.071	††	0.007		0.087		0.048		309	††	143	††	118	††	93.7	††
L036	EB-36	0.002		0.124	†	0.054		0.24		0.001		0.013		0.496		0.994		1.28		0.027		0.016		0.008	
L133	AE-23									0.002		0.003		0.022		0.019									
L159	DE-23	0.002		0.022		0.028		0.018																	

Lab. Code #	Method Codes	Reported data on plant Sodium (%Na w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.006		0.139		0.243		0.327	††	0.757	††	0.01	††	0.003	†	0.134	††	0.136		0.044		0.016	††	0.049	
L005	GI-23	0.006		0.142	††	0.285	††	0.379	††	0.516		0.001		0.007		0.008	††								
L007	AD-09	0.008		0.075	††	0.111	††	0.166	††	0.621		0.004		0.019	†	0.112									
L009	GJ-23	0.005		0.089		0.235		0.321	†	0.597		0.005	†	0.014		0.097		0.117		0.041		0.009		0.046	
L011	GJ-23	0.0097	††	0.106		0.183		0.246		0.69		0.003		0.013		0.076		0.095		0.026	††	0.004	††	0.044	
L012	GE-11	0.021	††	0.111		0.199		0.251		0.659		0.027	††	0.038	††	0.112		0.161		0.072	††	0.045	††	0.082	††
L013	DN-23	0.004		0.116		0.182		0.273		0.551		0.001		0.012		0.099		0.129		0.040		0.008		0.060	
L016	GI-23	0.004		0.115		0.221		0.267		0.579		0.001		0.011		0.0958		0.134		0.044		0.009		0.052	
L017	DE-23	0.04	††	0.11		0.2		0.25		0.522		0.001		0.008		0.086		0.147		0.043		0.009		0.06	
L018	GJ-23	0.003		0.121		0.235		0.284		0.639		0.001		0.011		0.107		0.144		0.047		0.009		0.063	
L019	AE-24	0.051	††	0.167	††	0.204		0.351	††	0.578		0.031	††	0.037	††	0.097		0.125		0.040		0.009		0.051	
L022	DE-23	0.005		0.118		0.22		0.271		0.564		0.001		0.01		0.096		0.129		0.046		0.009		0.055	
L023	DN-23	0.005		0.097		0.185		0.226		0.498		0.001		0.009		0.088		0.097		0.038		0.008		0.048	
L024	AD-23									0.229	††	0.006	††	0.016		0.082		0.112		0.044		0.016	††	0.052	
L026	GI-23	0.005		0.103		0.219		0.261		0.541		0.001		0.01		0.091		0.122		0.039		0.007		0.047	
L028	DE-23	0.005		0.128		0.209		0.307		0.578		0.002		0.011		0.099		0.123		0.04		0.008		0.05	
L030	GJ-23	0.005		0.089		0.194		0.117	††	0.509		0.002		0.01		0.087		0.107		0.033	†	0.007		0.037	††
L032	GG-23	0.009		0.113		0.206		0.26		0.53		0.006	††	0.013		0.089		0.116		0.037		0.009		0.047	
L034	GG-23	0.005		0.105		0.18		0.251		0.536		0.002		0.009		0.087		0.128		0.04		0.008		0.054	
L035	AB-11	0.006		0.13		0.2		0.3		0.627		0.004		0.04	††	0.024	††								
L036	DE-23	0.004		0.107		0.189		0.267		0.575		0.002		0.011		0.092		0.141		0.042		0.014	††	0.055	
L044	GG-23	0.02	††	0.104		0.195		0.265		0.36	††	0.022	††	0.014		0.09		0.072	††	0.026	††	0.006		0.033	††
L045	GI-23	0.004		0.11		0.2		0.27		0.57		0.003		0.01		0.1		0.12		0.04		0.008		0.05	
L064	GJ-11	0.009		0.112		0.167		0.213	†	0.543		0.003		0.097	††	0.092		0.12		0.038		0.011		0.057	
L079	GJ-23	0.004		0.118		0.19		0.26		0.568		0.001		0.01		0.094		0.145		0.047		0.011		0.063	
L080	GJ-13									0.63		0.026	††	0.04	††	0.137	††								
L097	DE-23	0.006		0.119		0.216		0.277		0.598		0.002		0.01		0.102		0.13		0.043		0.008		0.053	
L133	GG-23									0.561		0.001		0.011		0.094		0.125		0.042		0.009		0.052	
L135	DN-23	0.019	††	0.12		0.201		0.26		0.52		0.001		0.008		0.088		0.126		0.042		0.01		0.052	
L139	AD-23	0.002		0.12		0.207		0.258		0.555		0.001		0.02	††	0.093		0.11		0.04		0.01		0.05	
L156	GI-23	0.007		0.117		0.161		0.35	††	0.607		0.003		0.013		0.096		0.137		0.041		0.009		0.061	
L159	DE-23	0.005		0.105		0.207		0.188	††									0.15		0.046		0.008		0.051	
L900	GE-11									1.03	††	0.502	††	0.129	††	1.62	††								

Lab. Code #	Method Codes	Reported data on plant Sulfur (%S w/w)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	0.126		0.221		0.112		0.362		0.133		0.082		0.256		0.203		0.155		0.12		0.092		0.557	
L011	GJ-23	0.136		0.23		0.103		0.382		0.147		0.086		0.276		0.224		0.179		0.14		0.109		0.659	
L013	DN-23	0.138		0.24		0.12		0.371		0.141		0.092		0.273		0.215		0.157		0.118		0.095		0.607	
L016	GI-23	0.133		0.238		0.117		0.372		0.144		0.091		0.281		0.221		0.175		0.137		0.105		0.615	
L017	DE-23	0.133		0.252		0.126		0.4		0.135		0.078		0.258		0.202		0.186		0.141		0.105		0.634	
L018	GJ-23	0.151		0.263		0.131		0.408		0.164		0.099		0.311		0.244		0.181		0.137		0.11		0.754	
L019	CA-37	0.129		0.232		0.115		0.382		0.136		0.087		0.253		0.204		0.176		0.134		0.1		0.663	
L022	DE-23	0.14		0.245		0.125		0.396		0.15		0.093		0.297		0.228		0.173		0.135		0.103		0.61	
L023	DN-23	0.146		0.258		0.126		0.415		0.144		0.090		0.284		0.22		0.157		0.122		0.094		0.576	
L024	AD-23									0.01	††	0.005	††	0.017	††	0.016	††	0.106	††	0.05	††	0.005	††	0.374	††
L026	GI-23	0.136		0.237		0.124		0.396		0.151		0.094		0.298		0.229		0.174		0.134		0.103		0.629	
L028	DE-23	0.149		0.253		0.121		0.403		0.156		0.097		0.306		0.23		0.155		0.125		0.093		0.585	
L030	GJ-23	0.132		0.256		0.121		0.406		0.137		0.085		0.275		0.214		0.152		0.109		0.085		0.491	
L032	GG-23	0.131		0.228		0.114		0.363		0.139		0.085		0.257		0.204		0.153		0.114		0.088		0.527	
L034	GG-23	0.135		0.23		0.111		0.362		0.141		0.084		0.249		0.206		0.163		0.12		0.1		0.601	
L036	DE-23	0.14		0.257		0.124		0.404		0.152		0.096		0.296		0.227		0.178		0.131		0.107		0.665	
L044	GG-23	0.146		0.265		0.142		0.436		0.13		0.086		0.291		0.187									
L045	GI-23	0.14		0.25		0.13		0.42		0.15		0.09		0.27		0.24		0.18		0.14		0.11		0.66	
L064	BA-30	0.165		0.258		0.163	††	0.44		0.145		0.101		0.273		0.239		0.198		0.106		0.096		0.65	
L079	GJ-23	0.132		0.284		0.11		0.395		0.143		0.08		0.268		0.215		0.16		0.113		0.092		0.587	
L097	DE-23	0.146		0.263		0.127		0.4		0.155		0.098		0.302		0.233		0.178		0.136		0.109		0.673	
L133	GG-23									0.145		0.091		0.306		0.244		0.158		0.109		0.087		0.579	
L135	DN-23	0.138		0.223		0.116		0.355		0.15		0.093		0.299		0.233		0.173		0.132		0.103		0.614	
L139	CA-37	0.158		0.261		0.161	††	0.411		0.156		0.109		0.302		0.235		0.181		0.146		0.117		0.637	
L156	GI-23	0.158		0.313	††	0.149		0.462		0.241	††	0.157	††	0.897	††	1.64	††	0.172		0.134		0.112		0.594	
L159	DE-23	0.149		0.26		0.139		0.421										0.171		0.131		0.12		0.707	
L164	GJ-30									0.136		0.057	††	0.346		0.241									

Lab. Code #	Method Codes	Reported data on plant Zinc (mg Zn/kg)																							
		October 2009 (Round 109)								*February 2010 (Round 309)*								*April 2010 (Round 509)*							
		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	33.9		26.1	††	15.4	††	52.7		22.4		16.3		46.9		23.2		25		72.9		22.5		15.5	
L005	GI-23	30.3		16.8	††	5.10	††	56.6		16.9	††	11.4	††	41.2		27.3	††	21.1		86.7	†	17		14.7	
L007	AD-13	30		25.3	†	11.3		53.3		26		16.3		45.8		23.5									
L009	GJ-23	33.2		23.1		16.1	††	50.4		23.1		17.5		42.9		22		28.9		76.2		22.9		17.7	
L011	GJ-23	31.2		22.1		11.9		54.2		23.1		14.5		41.5		22.7		26.2		82.3		22.2		20	
L013	DN-23	19.3	††	20.6		11.7		45.6		22.4		15.5		42		21.3		22.3		68.8		19.6		15.2	
L016	GI-23	29.4		22		12.1		48.8		22.9		15.2		43.8		21.9		24.4		74.6		20.6		16.1	
L017	DE-23	29		22		12		48		29	††	18		43		25		15.9	††	62		10.3	††	6.79	††
L018	GJ-23	30.8		23.4		12.5		53.8		25		15		45.9		22.8		24.3		73		20.6		19	
L019	AE-24	28.5		21.7		11.2		52.5		23.6		14.3		43		20.2		23.5		67.4		20.4		15.4	
L022	DE-23	29.9		22.5		12.3		51.8		23.5		15.5		44.4		22.7		23.7		72.4		20.2		16.1	
L023	DN-24	30.6		22.6		12.4		52.4		22.1		14.5		43.2		21.2		21.2		67.6		18.2		14.3	
L024	AD-23									20.9		16.4		41.9		20.5		33.9	††	89.5	††	53.8	††	27.6	††
L026	GI-23	29.6		19.2	†	11.4		46.9		22.4		14.8		42.8		21.3		23.2		72.1		20.4		15.2	
L028	DE-23	30.5		23.4		12.4		54.5		25.2		16		47		23.6		22.6		69		18.5		15.7	
L030	GJ-23	27.3		22.7		11.4		66.4	††	20.4		13.5		42.1		20.4		20		60.6		16		12.8	
L032	GG-23	28.3		21		12		47.6		22.5		15.8		42.4		21.7		21.2		60.8		17.3		13.4	
L034	GG-23	28		22.1		11.7		49.1		23.6		13.1		41.4		21.2		24.5		69		19.6		18.2	
L035	AB-11	27.6		26.8	††	12.6		50.4																	
L036	DE-23	28.5		23.1		12.6		51.1		24.4		15.2		45.2		23		23.9		68.8		19.5		17.3	
L044	GG-23	21.6	††	16.7	††	9.11	††	41.8		17	††	14		31.6	††	17.4		11.2	††	41.8	††	10.6	††	9.15	††
L045	GI-23	30.8		25.5	††	13.7		53.7		25.8		15.5		40.6		24.1		21.9		72.1		20.3		14.1	
L064	GJ-11	25.7	†	21.5		12		48		22		15.7		41.8		21.2		21.8		65.6		19.8		16.8	
L079	GJ-23	30.5		21.8		10.9		45.3		26.2	†	15.8		47.9	††	24.7		25.2		73.5		27	†	17.8	
L080	GJ-13									20		9.5	††	43		20									
L097	DE-23	29.8		22.7		11.9		48.6		24.9		17.2		46.7		23.6		25.6		79.8		23.2		17.6	
L133	GG-23									20.7		14.7		42.9		21.2		21.5		65.5		17.7		13.8	
L135	DN-23	29		18	††	11.5		46		22.6		15.4		43		21.8		23.7		71.5		20.2		15.8	
L139	AD-23	31.7		22.3		12.7		52.1		22.4		15.2		43.9		19.7		20.2		77.2		23		16.8	
L142	Not Specified	22	††	18	††	10		41		25		16.7		46.8		23.1		4.24	††	19.9	††	21.8		7.12	††
L156	GI-23	31.7		24.2		14.8	††	44.1		22.1		16.9		41.7		19.9		21.7		69.6		20.6		15.3	
L159	DE-23	31		22.6		13.2		50.5										25.4		81.5		24.2		19.2	