Australasian
Soil and Plant
Analysis Council Inc.

ASPAC Plant Proficiency Testing Program Report 2013-14

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April 2017

ISSN # 1446-3598

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An appropriate citation for this report is:

Sparrow, L.A., Lyons, D.J., Rayment G.E. and Hill, R. (2017). *ASPAC Plant Proficiency Testing Program Report 2013-14.* 50 + vi pp. ASPAC, Melbourne, Victoria.

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Foreword

This annual report is the tenth in the upgraded inter-laboratory proficiency program (ILPP) for plant chemical tests, the first of which occurred in 2004-2005 report. It covers three "rounds" each of four specially prepared samples sent to around 39 participants in October 2012, in February 2013 and in April 2013. A similar annual program for soils (reported separately) operated over much the same time period.

The members of ASPAC's LPC, 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 Global Proficiency Ltd (GPL), our service provider.

The ASPAC-LPC and the ASPAC Executive Committee also appreciates the effort made by laboratories who utilized the method-specific proficiency program. By participating, they share a commitment to and responsibility for measurement quality, noting that measurement proficiency is only a component of laboratory accreditation to ISO-IEC 17025 standard, which should be an achievement goal for laboratory managers.

Dr Roger Hill
ASPAC-LPC Convenor

Acknowledgements

Mr Lyndon Palmer (South Australia) is thanked for helping to identify and quantify random Co, Cu and occasionally Fe contamination in circulated plant samples. We also thank Mr Alan Jeffrey (Queensland) and staff at Hill Laboratories (New Zealand) for their analytical efforts to help discover occasional plant sample contamination during preparative stages. Those commissioned by GPL to confirm that test plant samples were homogenous prior to circulation for proficiency testing purposes (e.g., DSITI, Queensland Australia) are also acknowledged, as are operational staff of GPL.

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Service Provider Details 2016

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[A] ***Note:*** GPL, under its "PlantChek" logo, is accredited (Accreditation No. 1) by IANZ (the New Zealand accreditation authority) to ISO/IEC 17043:2010 standard, noting that IANZ is a full member of both the International Laboratory Accreditation Cooperation (ILAC), and Asia Pacific Laboratory Accreditation Cooperation (APLAC). GPL is also recognised by NATA (National Association of Testing Authorities of Australia) as a proficiency provider.

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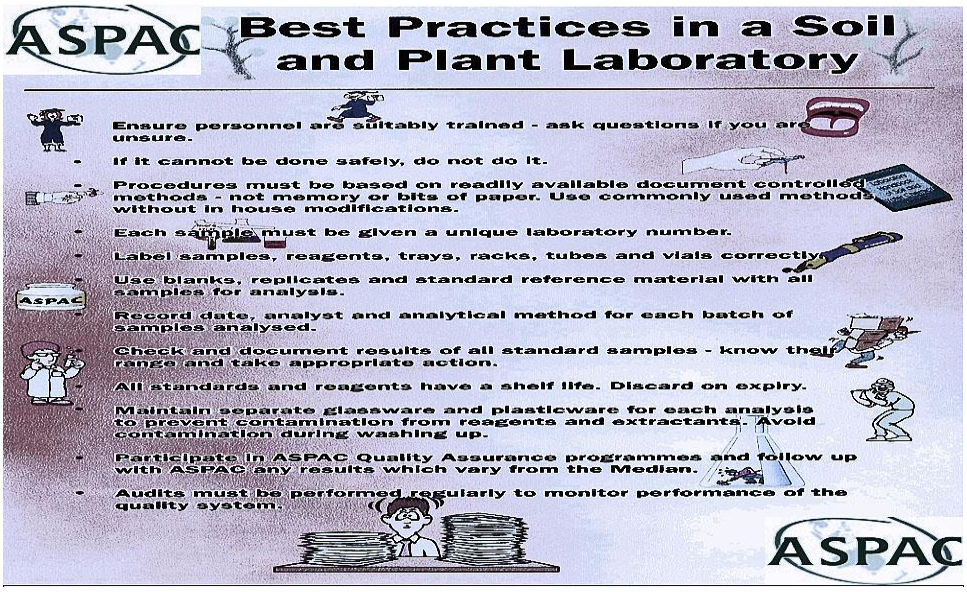
Notes on ASPAC Method-specific Certification: *what it is and what it is not*

In common with almost all soil, plant and water ILPPs worldwide, this plant ILPP used a selection of carefully prepared samples to allow participating laboratories to test and compare their method-by-method measurement performance relative to those of their peers across Australasia. The process is method-specific, as each method (or elemental test) is assessed separately using internationally-respected non-parametric statistics. Obviously, the peer review process is strongest for methods/tests with most participants, always ≥7 and typically well in excess of that number. Regular feedback with "round-by round" regularity provides tangible evidence to guide laboratory managers in their efforts towards measurement excellence.

Subsequently, a published numeric process was used on a method/test basis and on each of three "rounds" of four samples in the program year to determine whether or not a given laboratory qualified to be ASPAC Certified for that test. For the program year covered by this report, 22 was the maximum number of possible certifications per laboratory. The ASPAC Certifications achieved remained current until superseded by findings from the next corresponding ILPP.

Irrespective of method-measurement quality, it remains the responsibility of laboratory management to pay close attention to total quality management. This involves attention to performance in inter-laboratory proficiency programs while also taking account of variables such as technical competence and procedures, sample preparation, records of corrective actions, customer complaints, instrumental accuracy checks and maintenance, staff training / qualifications, standard-solution preparations, method validation / verification, internal audits, batch quality control, reports to clients, etc. Laboratory accreditation to ISO-IEC 17025 standard covers all of these. The National Association of Testing Authorities (NATA) is responsible for laboratory accreditation and compliance in Australia.

Field sampling, the transport of samples to the laboratory, and the interpretation of test results for clients are other areas that affect the final outcome of soil and plant chemical testing for diagnostic purposes. For helpful guidelines on these topics, refer to publications by Brown (1994)[1], Peverill *et al*. (1999)[2], Rayment (2006)[3] and Reuter and Robinson (1997)[4]. The following "poster", prepared by ASPAC, was designed for within-laboratory use.



1 Brown, A.J. (1993). A review of soil sampling for chemical analysis. *Australian Journal of Experimental Agriculture* **33 (8)**: 983-1006.

2 Peverill, K.I., Sparrow, L.A. and Reuter, D.J. (Editors) (1999). "Soil Analysis: an interpretation manual". (18+369 pp.) CSIRO Publishing, Victoria.

3 Rayment, G.E. (2006). Australian efforts to prevent the accidental movement of pests and diseases in soil and plant samples. *Communications in Soil Science and Plant Analysis* **37**: 2107-2117.

4 Reuter, D.J. and Robinson, J.B. (Editors) (1997). "Plant Analysis: an interpretation manual". (12+572 pp.) CSIRO Publishing, Victoria.

1. Introduction

This not-for-profit, annual report for 2013-14 consolidates (for ASPAC members and for the public record) program methodology, summary statistics, and a full listing of results by test for three "rounds" of plant chemical testing. For historical details on earlier annual ILPPs for both plant and soil samples undertaken by ASPAC, refer to the ASPAC Web Site at http://www.aspac-australasia.com.

The report includes a description of how ASPAC confers performance-based, method-specific certification to laboratories that participated throughout the program year. To respect confidentiality, the cross-reference between laboratory name and laboratory identification number is not included. However, laboratories certified as proficient for specific tests included in this annual program were documented at the time on ASPAC's public web site mentioned above.

2. Program Details

2.1 Responsibilities

GPL was contracted by ASPAC as the plant ILPP provider for 2013-14. Accordingly, GPL had responsibility on a "round-by round" basis for sourcing and preparing samples and for the timely supply of prepared samples to participating laboratories. They also undertook data collation and statistical analysis and "round-by-round" reporting for ASPAC. In addition, they assembled the contents of the summary and "raw" data tabulations provided in Section 3 and Appendix 4 of this report.

Members of ASPAC-LPC had responsibility to implement and resolve matters of policy and to provide guidance on technical matters specific to plant chemical testing both to GPL and to laboratory participants. The ASPAC-LPC also undertook statistical checks and other actions for quality control purposes, participated in a Technical Advisory Group operated jointly with GPL, and contributed to training workshops. Laboratory managers and staff of those who contributed to this annual program are encouraged to seek help from ASPAC if they are shown to be operating at levels of measurement performance below their peers. Appropriate contacts are members of the ASPAC-LPC and/or State representatives of ASPAC (or equivalent).

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

2.2 Plant program participation

Some 39 laboratories [27 from Australia, 2 from Fiji, 8 from New Zealand, 1 from Papua New Guinea] participated in the ASPAC plant ILPP in 2013-14, but numbers of reported results varied by "round" and plant test (see Table 1). The counts for each test element 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, units, laboratory participation and concentration ranges

Three proficiency "rounds" for plant materials – each comprising four samples – were offered in 2013-14. Participants were invited to analyse each sample using methods normally employed in their laboratory. Tests commonly performed are documented in Table 1, noting that participant numbers for each element and "round" are also listed. Laboratories were not required to submit results for every one of these tests, although a minimum of seven participating laboratories per "round" were required for any one test to permit meaningful statistical analyses. In addition, Table 1 includes concentration ranges (minimum, median, maximum) for each element across the 12 samples, noting that those

concentration ranges derive from "final" populations after removal of "stragglers" and "outliers". For 20 of the 22 plant tests, the population average concentration for a given element was greater than corresponding median (average values not presented), while for the other 2 tests (N, P) the average was less than the median. Moreover, 16 grand median concentrations were lower than their 2012-13 counterparts, one was much the same, and five were higher, suggesting final robust %CVs might be slightly higher for this program year than occurred in 2012-13.

Table 1. Plant tests, elemental symbols, units, the arithmetic average numbers of results per round submitted by participating laboratories in the ASPAC 2013-14 Plant ILPP, plus the concentration ranges and the final grand median concentration for all 22 tests.

2013-14 Plant tests	Symbol	Units	Number of participants			Concentration ranges (final) by test across 12 samples, as reported by labs		
			Oct 13	Feb 14	May 14	Minimum	Median	Maximum
Aluminium	Al	mg/kg	21	21	23	1.1	103	1270
Boron	B	mg/kg	31	29	28	0.732	21.3	184
Cadmium	Cd	µg/kg	13	11	13	2.05	34.9	1570
Calcium	Ca	%	37	33	34	0.006	0.85	2.35
Carbon	C	%	23	22	19	37.2	43.4	51.1
Chloride	Cl	mg/kg	23	23	21	400	5080	36200
Cobalt	Co	µg/kg	19	15	17	2.92	107	615
Copper	Cu	mg/kg	36	32	33	1.44	8.32	26.6
Iron	Fe	mg/kg	36	32	33	17.3	105	482
Lead	Pb	µg/kg	12	11	11	12.8	104	451
Magnesium	Mg	%	36	33	34	0.082	0.226	1.08
Manganese	Mn	mg/kg	36	32	33	3.72	66.8	1970
Molybdenum	Mo	µg/kg	20	16	16	60.4	267	732
Nitrate-N	NO_3-N	mg/kg	14	13	14	0.907	17.1	2850
Nitrogen	N	%	35	33	31	1.19	2.74	4.68
Phosphorus	P	%	37	32	33	0.12	0.234	0.467
Potassium	K	%	33	33	34	0.381	1.58	6.69
Selenium	Se	mg/kg	15	13	13	12	39.9	110
Silicon	Si	%	7	6	6	0.004	0.049	1.84
Sodium	Na	%	35	31	31	0.001	0.105	2.34
Sulfur	S	%	32	29	29	0.085	0.184	0.59
Zinc	Zn	mg/kg	36	32	32	11.8	25.4	93.4

All but one of the tests in Table 1 were assumed to be total concentrations in the plant material. The assumption is that all results were reported on a 65^{o}C oven-dry basis, not on an "as received" basis. However, some results reported as "totals", such as Al and Si, may only reflect acid digestible concentrations.

Details of analytical methods used are not described in detail in this report. Method-indicating codes, however, are summarized in Tables 5 and 6 of Appendix 4, while relevant Codes are included with the "raw-data" tabulations in Appendix 4.

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)[5].These sub-samples were then tested in duplicate for plant total N, using Dumas combustion. The tests were conducted in one laboratory that was accredited to ISO 17025 standard. Several of the samples were also checked for the accidental presence of trace heavy metal contaminants, as earlier mentioned.

Results from 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 other than ASP 22 were considered to meet homogeneity criteria suited to proficiency testing. Examples of the homogeneity data and statistical assessments are summarised in Appendix 2. The homogeneity "problem" with test sample ASP 22 involved questionable data for Sample 1, Reps 1 and 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[6].

Ultimately, the samples used in the three "rounds" of the 2013-14 program were distributed and coded as follows: October 2013 – ASP 101-104; February 2014 – ASP 21-24; and May 2014 – ASP 51-54. The association between sample code and sample type is provided in Table 2. Nine of the12 test plant samples were sourced from New Zealand and the other three came from Australia.

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

6 Rayment, G.E. (2006). Australian efforts to prevent the accidental movement of pests and diseases in soil and plant samples. *Communications in Soil Science and Plant Analysis* **37**: 2107-2117.

Table 2. Sample identification and the origin of the samples included in the 2013-14 ASPAC plant ILPP.

Sample ID	*Round ID*	*Sample Type*	*Origin*
ASP 101	**113**	Vetch Hay	Australia
ASP 102		Maize Flour	New Zealand
ASP 103		Olive Leaves	New Zealand
ASP 104		Spinach Leaves Midribs Removed	New Zealand
ASP 21	**313**	Carrot Foliage	New Zealand
ASP 22		Magnolia Leaves	New Zealand
ASP 23		Maize Leaves	New Zealand
ASP 24		Clover Hay	Australia
ASP 51	**513**	Tasmanian Blackwood Leaves	New Zealand
ASP 52		Beetroot Leaves	New Zealand
ASP 53		Grass Hay	Australia
ASP 54		Barley Grain	New Zealand

2.5 Data analysis and periodic reporting

Laboratory results, after submission to GPL, 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[7,8] is suited to datasets of as few as seven 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.

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 rounded 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 those trace metals reported in mg/kg, and 0.001 % for Na, while two decimal places were accepted for other tests, rather than to three significant figures. However, the program (like others internationally) did not accept a zero value nor 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 either report the raw concentration readout from the instrument in absolute terms or 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

7 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. *Communications in Soil Science and Plant Analysis* **31**: 1513-1530.

8 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.)

addition, a newsletter from GPL occasionally went to all participating laboratories. Its main purpose was to assist in the interpretation of interim reports. Also included in GPL's newsletter was information about upcoming events and operational administration of the program.

Laboratories that participated in the 2013-14 plant ILPP all received from GPL (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.

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[9]. 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[10]	The robust coefficient of variation (Robust % CV) = (100 x normalised IQR / median). For simplicity, the Robust %CV shown is for the initial results, and also for the "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.

9 SAS Procedure Guide.

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

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" in a 12-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 for a given method / test (not laboratory accreditation) applies when a laboratory incurs no more than four 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 the ASPAC-LPC through its Convenor. When the explanation was accepted, performance from the three most recently completed "rounds" was used to assess eligibility for certification. There were no "very special circumstances" in 2013-14.

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 2013-14 Plants' program remained valid until superseded by findings from the following 2014-15 ILPP.

3. Summary Statistics

This section 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 2013-14. 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.

2013-14: Aluminium (mg Al/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	21	21	21	21	21	21	21	21	23	23	23	23
Minimum i	82.4	0.001	26.3	1100	713	97.7	81.9	314	27.2	805	18.6	0.424
Maximum i	118	6.02	77.4	1630	1240	191	150	998	141	1150	63.2	51.1
Median i	106	1.11	41.3	1270	882	121	101	507	55.8	985	44.7	3.63
Mean i	104	1.42	42.9	1300	885	126	101	524	59.6	998	43.6	7.75
MAD i	10	0.56	4.5	60	47	6	7.6	85	7	66	6.5	1.5
IQR i	16.5	0.842	7.01	97.5	76.2	11.6	9.79	119	9.12	105	10.2	2.54
Robust CV% i	16	76	17	7.7	8.6	9.6	9.7	24	16	11	23	70
Median f	106	1.1	41.1	1270	874	120	100	504	54.9	985	44.9	2.79
Mean f	104	1.05	41.2	1280	862	122	98.6	500	54.5	998	44.7	3.33
MAD f	10	0.55	4.3	60	44	5	6.8	85	3.4	66	5.95	0.75
IQR f	16.5	0.817	6.25	98.2	69.8	7.41	8.75	115	5.93	105	9.88	1.88
Robust CV% f	16	74	15	7.7	8	6.2	8.7	23	11	11	22	67
Outliers	0	2	1	1	3	3	1	1	2	0	1	3
Stragglers	0	0	0	0	0	1	0	0	3	0	0	2

2013-14: Boron (mg B/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	31	30	31	31	29	29	29	29	28	28	28	28
Minimum i	17.5	0.1	7.5	30.5	25.1	130	2	40.6	17.5	13.4	7.63	0.06
Maximum i	29.9	10.9	22	48.3	58.5	268	42	73.4	60.2	55.5	41.4	33.2
Median i	25	2.3	17	41	30.9	182	16.8	47.1	21.9	20.7	10.5	0.845
Mean i	24.7	2.87	17.2	40.9	32.2	183	17.2	48.6	23.2	22.1	11.7	2.46
MAD i	1.5	0.5	1.2	1.7	1.8	9	1.7	2.8	1.45	0.975	0.66	0.348
IQR i	2.22	1.06	1.78	2.59	2.93	13.3	2.56	3.97	2.19	1.94	0.977	0.499
Robust CV% i	8.9	46	10	6.3	9.5	7.3	15	8.4	10	9.4	9.3	59
Median f	25	2.24	17	41	30.9	183	16.4	46.7	21.9	20.7	10.3	0.694
Mean f	24.8	2.14	17.2	41.1	31	184	16	47.3	21.6	20.9	10.3	0.732
MAD f	1.3	0.3	0.6	1.3	1.7	7	1.35	2.3	1.01	0.9	0.48	0.215
IQR f	2.04	0.511	1.11	1.93	2.67	10.4	2.26	3.93	1.74	1.85	0.688	0.421
Robust CV% f	8.2	23	6.5	4.7	8.6	5.7	14	8.4	8	9	6.7	61
Outliers	1	5	3	4	2	3	3	2	2	4	4	6
Stragglers	1	2	3	2	0	1	2	0	1	1	2	0

2013-14: Cadmium (µg Cd/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	13	13	13	13	11	11	11	11	12	13	12	13
Minimum i	1	0.5	10	1120	460	3.29	65	190	8.26	723	16	14.8
Maximum i	47.7	15.1	71.6	1710	647	100	246	278	31.4	11300	32.9	125
Median i	38.5	2.4	33.1	1540	598	6.4	114	254	16.6	874	19.3	16.7
Mean i	34.8	3.89	32.6	1500	582	15.7	125	252	17.7	1670	20.8	30.7
MAD i	5.2	1.4	9.6	79	30	1.19	6	13	1.7	53	2.75	1.5
IQR i	8.64	2.49	18.1	138	62.3	2.96	23.7	23.7	2.91	82.3	4.74	4.52
Robust CV% i	22	100	55	9	10	46	21	9.3	18	9.4	25	27
Median f	38.6	2.05	31.2	1570	601	6.36	114	256	16.6	866	18.9	16.5
Mean f	37.6	2.3	29.4	1560	595	6.29	112	258	15.8	863	19.7	17.3
MAD f	4.25	1.05	11.2	94	29.5	0.16	2	11.5	1.7	52	2.4	1.3
IQR f	7.04	1.99	17.8	132	49.9	0.363	4.45	19.3	2.3	78.4	4.08	4.3
Robust CV% f	18	97	57	8.4	8.3	5.7	3.9	7.5	14	9.1	22	26
Outliers	1	2	1	2	1	2	4	1	3	1	1	2
Stragglers	0	0	0	0	0	2	0	0	0	0	0	0

2013-14: Calcium (%Ca)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	37	36	37	36	33	33	33	33	34	34	34	34
Minimum i	0.663	0.003	0.065	0.073	2.03	1.29	0.61	0.908	0.542	1.56	0.221	0.025
Maximum i	3.16	4.15	6.46	1.57	3.24	2.28	1.43	1.75	1.05	2.46	0.364	0.046
Median i	0.765	0.006	0.605	1.39	2.36	1.43	0.77	1.06	0.93	2.17	0.319	0.03
Mean i	0.828	0.122	0.758	1.36	2.42	1.47	0.787	1.09	0.912	2.15	0.31	0.030
MAD i	0.026	0.001	0.019	0.070	0.061	0.04	0.02	0.037	0.019	0.09	0.012	0.001
IQR i	0.042	0.001	0.033	0.102	0.104	0.065	0.031	0.056	0.029	0.135	0.029	0.001
Robust CV% i	5.5	21	5.5	7.3	4.4	4.5	4	5.3	3.1	6.2	9	4.9
Median f	0.765	0.006	0.605	1.39	2.35	1.43	0.77	1.05	0.93	2.17	0.32	0.03
Mean f	0.771	0.006	0.606	1.39	2.35	1.43	0.767	1.06	0.932	2.17	0.322	0.03
MAD f	0.024	0.0002	0.015	0.07	0.05	0.025	0.016	0.03	0.009	0.09	0.007	0.001
IQR f	0.040	0.000	0.025	0.104	0.067	0.042	0.02	0.048	0.015	0.133	0.012	0.001
Robust CV% f	5.3	7.8	4.2	7.5	2.8	2.9	2.6	4.6	1.6	6.1	3.6	4.6
Outliers	4	8	6	1	6	4	6	4	9	1	7	6
Stragglers	0	4	0	0	2	3	1	0	4	0	5	0

2013-14: Carbon (%C)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	23	23	23	23	22	22	22	22	19	19	19	19
Minimum i	40.3	36.9	47.2	34.9	37.5	42.6	41.1	41.7	47.1	35.2	40.4	40.2
Maximum i	45.5	45.6	51.4	40.7	41.2	45.7	44.5	46.4	52.4	38.2	44	44.8
Median i	44.1	43.5	49.9	39.6	39.7	44.6	43.1	44.4	51	37.2	43	43.2
Mean i	44	43.2	49.9	39.2	39.6	44.3	43	44.2	50.6	37.1	42.8	43.1
MAD i	0.5	0.6	0.6	0.5	0.551	0.516	0.45	0.759	0.3	0.3	0.3	0.5
IQR i	0.667	0.89	0.705	0.964	0.908	1.12	0.686	1.17	0.667	0.445	0.445	0.741
Robust CV% 1	1.5	2	1.4	2.4	2.3	2.5	1.6	2.6	1.3	1.2	1	1.7
Median f	44.5	43.6	50.1	39.9	39.8	44.6	43.1	44.7	51.1	37.2	43	43.2
Mean f	44.4	43.6	50.3	39.8	39.7	44.5	43.1	44.4	51	37.3	43	43.2
MAD f	0.35	0.375	0.4	0.3	0.502	0.45	0.4	0.6	0.15	0.3	0.1	0.4
IQR f	0.535	0.575	0.714	0.371	0.89	0.712	0.667	1.13	0.278	0.445	0.297	0.63
Robust CV% f	1.2	1.3	1.4	0.93	2.2	1.6	1.5	2.5	0.54	1.2	0.69	1.5
Outliers	2	3	2	3	1	2	1	1	4	2	2	1
Stragglers	1	2	1	3	0	0	0	1	1	0	2	1

2013-14: Chloride (mg Cl/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	23	23	23	23	23	23	23	23	21	21	21	21
Minimum i	0.494	0.409	0.449	0.486	2.55	0.22	0.26	0.87	0.536	3.27	1.7	0.128
Maximum i	22400	1300	17600	17700	30300	5200	5700	10700	5760	39100	19000	2600
Median i	5350	406	2500	4890	25600	2930	3220	9070	5280	36000	17700	1470
Mean i	5760	468	3190	5410	24400	2830	3120	8640	4730	32100	15800	1410
MAD i	534	34	228	310	1100	95	214	458	118	1000	800	85
IQR i	839	62.3	519	742	2080	237	326	792	255	1980	1700	108
Robust CV% i	16	15	21	15	8.1	8.1	10	8.7	4.8	5.5	9.6	7.4
Median f	5320	400	2470	4830	26000	2910	3220	9180	5350	36200	18100	1470
Mean f	5270	396	2530	4850	25700	2890	3190	9130	5330	36100	17900	1450
MAD f	388	22	168	110	923	70	73	289	70	800	418	35
IQR f	637	34.1	297	161	1330	108	172	463	110	1160	846	67.5
Robust CV% f	12	8.5	12	3.3	5.1	3.7	5.3	5	2.1	3.2	4.7	4.6
Outliers	4	5	3	7	4	9	5	3	4	4	3	4
Stragglers	1	3	1	4	0	0	3	1	2	1	1	4

2013-14: Cobalt (µg Co/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	19	19	19	19	15	15	15	15	16	17	17	16
Minimum i	104	1	0.001	242	112	42.8	40.6	299	10	115	400	0.458
Maximum i	190	34.7	121	396	292	137	92.8	454	870	262	732	40.1
Median i	161	3.2	31.4	306	165	60.5	49.5	380	25.1	170	610	9.1
Mean i	150	6.81	36.3	310	175	64.4	54.1	374	83.3	175	600	11.5
MAD i	12	1.64	3.6	8	25	9.3	3.4	33	4.76	27	48	4.1
IQR i	20.8	5.02	6.08	19.3	40	12.9	5.19	54.9	9.91	43.4	82.3	8.84
Robust CV% i	13	160	19	6.3	24	21	10	14	40	26	13	97
Median f	162	2.92	31.4	305	155	59.2	49.1	380	24.3	170	615	8.28
Mean f	158	2.47	32	305	158	56.6	49.6	374	24.7	175	612	8.54
MAD f	5	0.695	1.7	6	24	7.5	3	33	4	27	41.5	3.2
IQR f	15.6	1.88	3.93	8.9	37.4	13.2	4.41	54.9	5.72	43.4	50.4	3.96
Robust CV% f	9.6	65	13	2.9	24	22	9	14	24	26	8.2	48
Outliers	2	4	8	5	2	1	2	0	3	0	1	1
Stragglers	4	1	0	0	0	1	0	0	0	0	0	1

2013-14: Copper (mg Cu/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	36	36	36	36	32	32	32	32	33	33	33	33
Minimum i	5.01	0.44	5.3	2.88	7.49	6.76	5.46	5.44	3.88	14.2	1.59	1.94
Maximum i	9.36	7.99	12.9	11.2	19.9	17.4	13.6	14.9	9.96	30.3	6.36	6.36
Median i	6.21	1.47	7.38	9.05	15.6	13.4	11	11.4	7.65	26.4	4.67	3.93
Mean i	6.36	1.8	7.53	8.92	15.4	13.1	10.8	11.2	7.53	26.1	4.43	3.83
MAD i	0.235	0.145	0.25	0.45	0.7	0.735	0.531	0.575	0.25	1.4	0.25	0.19
IQR i	0.369	0.243	0.47	0.877	1.2	1.22	0.741	0.814	0.393	2.3	0.452	0.356
Robust CV% i	5.9	17	6.4	9.7	7.7	9.2	6.7	7.2	5.1	8.7	9.7	9.1
Median f	6.16	1.44	7.35	8.93	15.8	13.4	11	11.4	7.7	26.6	4.7	3.95
Mean f	6.15	1.45	7.42	9.01	15.7	13.4	11	11.3	7.73	26.7	4.69	3.92
MAD f	0.13	0.03	0.24	0.34	0.7	0.39	0.4	0.5	0.12	1.24	0.17	0.14
IQR f	0.226	0.037	0.363	0.556	1.04	0.519	0.648	0.704	0.211	1.93	0.265	0.196
Robust CV% f	3.7	2.6	4.9	6.2	6.6	3.9	5.9	6.2	2.7	7.3	5.6	5
Outliers	8	8	5	5	5	6	5	5	6	1	7	7
Stragglers	2	9	0	2	0	3	1	0	6	1	2	1

2013-14: Iron (mg Fe/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	36	36	36	36	32	32	32	32	33	33	33	33
Minimum i	69.5	6.26	33.8	177	302	44.4	76.7	221	43.3	211	32.6	8.57
Maximum i	220	274	625	617	712	111	184	594	88.5	547	150	87.7
Median i	134	17.8	52.6	466	484	76.7	136	411	67.9	444	70.1	30.2
Mean i	137	26.7	70.9	450	483	75.9	134	400	65.8	431	68.4	30.2
MAD i	10	1.45	3.95	30.5	58.5	4.65	9	32	4.4	46	4.9	1.8
IQR i	13.9	2.13	5.24	47.1	95.4	10.7	18	74.8	6.26	71.2	7.15	2.85
Robust CV% i	10	12	10	10	20	14	13	18	9.2	16	10	9.5
Median f	133	17.3	51.2	469	482	76.9	136	415	68.4	451	70.5	30.4
Mean f	133	17.2	51	460	468	78	136	411	68.4	447	70	29.9
MAD f	7	1.1	2.79	26.5	55	2.5	7	19	2.8	36.5	3.2	1.4
IQR f	8.9	1.63	4.19	36.5	93	2.99	10.4	27.4	4.11	55.8	5.24	2.35
Robust CV% f	6.7	9.4	8.2	7.8	19	3.9	7.6	6.6	6	12	7.4	7.7
Outliers	7	7	6	5	2	6	3	6	6	1	8	7
Stragglers	2	0	0	1	0	6	2	2	2	2	1	0

2013-14: Lead (µg Pb/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	12	12	12	12	11	11	11	11	11	11	11	11
Minimum i	67	0.605	52.2	171	86	87.2	51	174	82.8	29	4	4.5
Maximum i	171	65	126	624	526	492	280	669	1600	1690	944	902
Median i	100	16.2	63.4	451	337	110	115	428	111	322	54	30.5
Mean i	106	22.4	74.4	422	320	147	129	419	248	398	131	108
MAD i	12.1	7.51	7.2	31.5	46	16	17	37	13	29	15.9	12.5
IQR i	20.7	13.7	30.1	60.2	70.4	31.1	23.2	71.9	14.8	86	28.4	17.8
Robust CV% i	21	85	48	13	21	28	20	17	13	27	53	58
Median f	99.8	12.8	62	451	337	97.9	112	430	108	323	47.5	25.5
Mean f	95.6	14.3	60.6	444	331	105	105	425	108	331	49.8	22.5
MAD f	9	7.08	4.5	26	13	10.7	14.3	11	7	16	17.5	8.6
IQR f	16.7	11.7	7.78	41.1	43.7	17.8	26.7	23.2	15.6	24.5	25.7	17.6
Robust CV% f	17	92	13	9.1	13	18	24	5.4	14	7.6	54	69
Outliers	1	2	3	3	3	2	2	4	1	3	1	1
Stragglers	1	0	0	0	1	0	0	1	1	1	0	1

2013-14: Magnesium (%Mg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	36	36	36	36	33	33	33	33	34	34	34	34
Minimum i	0.187	0.084	0.075	0.506	0.281	0.247	0.193	0.253	0.131	0.328	0.174	0.07
Maximum i	0.427	1.15	3.39	0.693	3.35	0.402	0.297	0.433	0.232	1.41	0.251	0.095
Median i	0.218	0.094	0.082	0.572	0.358	0.286	0.22	0.29	0.209	1.09	0.23	0.085
Mean i	0.221	0.124	0.173	0.581	0.452	0.29	0.223	0.296	0.203	1.08	0.222	0.084
MAD i	0.007	0.004	0.002	0.017	0.015	0.009	0.008	0.01	0.008	0.05	0.007	0.002
IQR i	0.009	0.006	0.003	0.025	0.026	0.015	0.013	0.019	0.011	0.07	0.016	0.003
Robust CV% i	4.2	5.9	3.6	4.3	7.2	5.3	6.1	6.4	5.2	6.5	6.9	3.8
Median f	0.217	0.094	0.082	0.567	0.356	0.286	0.22	0.29	0.21	1.08	0.231	0.085
Mean f	0.215	0.095	0.081	0.567	0.354	0.286	0.22	0.291	0.208	1.09	0.23	0.085
MAD f	0.006	0.003	0.002	0.012	0.01	0.007	0.007	0.009	0.006	0.024	0.004	0.002
IQR f	0.007	0.005	0.002	0.019	0.017	0.01	0.011	0.013	0.01	0.037	0.006	0.003
Robust CV% f	3.4	5.8	2.7	3.3	4.7	3.5	5	4.6	4.6	3.4	2.6	3.1
Outliers	3	1	5	5	4	4	3	4	5	4	6	4
Stragglers	0	0	0	2	4	1	0	0	2	5	5	0

2013-14: Manganese (mg Mn/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	36	36	36	36	32	32	32	32	33	33	33	33
Minimum i	13.8	0.02	10.2	6.68	67.8	646	43.2	23.4	204	143	27.5	3.07
Maximum i	102	68.7	51.1	73.4	155	2820	149	266	383	262	64.3	7.09
Median i	75.9	3.72	12.8	53.8	115	1970	80.2	44.1	351	242	56.9	6.31
Mean i	74	5.97	14.5	53.3	115	1940	82.2	51.1	338	235	53.2	5.94
MAD i	2.9	0.18	0.736	1.85	5	60	2.45	1.3	11	9	2.1	0.34
IQR i	3.89	0.3	1.07	2.87	7.41	95.6	4.45	2.06	20	14.1	6.97	0.593
Robust CV% i	5.1	8.1	8.4	5.3	6.4	4.9	5.5	4.7	5.7	5.8	12	9.4
Median f	76	3.72	12.7	53.5	115	1970	80.2	43.9	352	247	57.5	6.44
Mean f	75.6	3.7	12.7	53.9	114	1960	80.2	43.8	353	246	57.3	6.39
MAD f	2.7	0.122	0.5	1.08	3.96	24	1.15	0.9	9.5	7	1.15	0.25
IQR f	3.48	0.195	0.806	1.7	6.12	45.2	1.74	1.33	14.8	10.4	1.89	0.393
Robust CV% f	4.6	5.2	6.3	3.2	5.3	2.3	2.2	3	4.2	4.2	3.3	6.1
Outliers	5	7	6	5	5	9	8	5	5	4	9	6
Stragglers	0	3	1	4	1	2	4	3	0	2	2	0

2013-14: Molybdenum (µg Mo/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	20	20	20	20	16	16	16	16	16	16	16	16
Minimum i	164	59	0.001	311	10	10	254	10	44.2	367	252	231
Maximum i	621	430	365	1190	700	750	1200	750	377	1080	578	356
Median i	279	140	60.7	746	239	109	470	309	70.5	719	308	254
Mean i	296	166	90.6	761	271	165	495	327	109	703	331	269
MAD i	29	15	13.6	60.5	24.5	7.5	18	16.5	11.3	41	30	21
IQR i	41.1	25.9	24.1	96.7	39.3	20	28.4	23.7	18.8	94.1	50	44.1
Robust CV% i	15	19	40	13	16	18	6	7.7	27	13	16	17
Median f	283	139	60.4	730	238	108	470	310	66.9	732	298	250
Mean f	279	142	59	745	237	111	467	310	66.8	722	300	258
MAD f	12	11	11.1	43	18	6	10.5	5	6.4	18.5	31.5	17.5
IQR f	24.7	15.6	17	73.4	29.7	10.4	19.5	12.6	14.2	35	47.8	34.7
Robust CV% f	8.7	11	28	10	12	9.6	4.1	4.1	21	4.8	16	14
Outliers	5	5	4	5	3	5	5	4	3	5	2	2
Stragglers	2	0	0	0	0	0	1	1	0	1	0	0

2013-14: Nitrate-nitrogen (mg NO_3-N/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	14	14	14	14	13	13	13	13	14	14	14	14
Minimum i	1.37	0.188	0.001	1010	1950	24.8	22.6	0.001	0.001	111	1.43	0.001
Maximum i	857	154	268	2880	3710	109	508	82	108	1870	1680	21
Median i	28	6.26	11.5	1940	2850	32.8	42.8	10	3.49	1340	7.11	2.85
Mean i	98.8	17.8	40	1930	2900	45.5	79	19.1	14.3	1290	132	5.73
MAD i	13	5.9	6.71	186	305	8	13.6	4	2.76	96	4.11	2.42
IQR i	32.2	11.1	15.3	317	443	22.8	24.1	10.2	6.64	148	7.25	7.13
Robust CV% i	110	180	130	16	16	69	56	100	190	11	100	250
Median f	23.1	0.95	11	1940	2850	31	38	9.23	3	1340	4.97	0.907
Mean f	24.4	2.96	10.3	1930	2900	32.5	39.5	9.32	2.33	1340	5.73	1.22
MAD f	9.7	0.762	5.08	165	305	3.4	11	2.59	1.15	90.5	2.08	0.274
IQR f	15.8	4.37	7.8	236	443	8.01	17	4.42	2.05	133	4.14	0.529
Robust CV% f	68	460	71	12	16	26	45	48	68	10	83	58
Outliers	3	1	2	2	0	3	1	2	2	2	2	2
Stragglers	0	4	1	0	0	1	1	1	3	0	1	4

2013-14: Nitrogen (%N)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	35	35	35	35	33	33	33	33	31	31	31	31
Minimum i	2.62	1.09	0.164	3.63	2.77	1.36	2.75	2.48	2.4	3.04	1.47	1.38
Maximum i	3.75	1.32	2.08	4.93	3.54	2	3.64	3.41	2.86	3.58	2.87	1.65
Median i	3.48	1.19	1.86	4.67	3.19	1.55	3.05	2.77	2.69	3.46	1.64	1.54
Mean i	3.46	1.19	1.82	4.62	3.18	1.55	3.06	2.79	2.68	3.43	1.67	1.54
MAD i	0.09	0.03	0.04	0.067	0.08	0.05	0.08	0.08	0.04	0.05	0.047	0.04
IQR i	0.133	0.037	0.056	0.102	0.13	0.063	0.122	0.109	0.059	0.082	0.079	0.059
Robust CV% i	3.8	3.1	3	2.2	4.1	4.1	4	3.9	2.2	2.4	4.8	3.9
Median f	3.48	1.19	1.86	4.68	3.2	1.55	3.05	2.77	2.7	3.47	1.64	1.54
Mean f	3.5	1.19	1.86	4.68	3.2	1.54	3.05	2.78	2.7	3.47	1.64	1.55
MAD f	0.07	0.025	0.04	0.06	0.08	0.03	0.07	0.07	0.035	0.05	0.04	0.04
IQR f	0.111	0.037	0.054	0.089	0.111	0.048	0.096	0.104	0.045	0.080	0.069	0.056
Robust CV% f	3.2	3.1	2.9	1.9	3.5	3.1	3.2	3.7	1.6	2.3	4.2	3.6
Outliers	2	5	2	5	4	4	4	2	5	3	2	2
Stragglers	2	0	0	1	0	4	2	0	0	0	0	0

2013-14: Phosphorus (%P)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	37	37	37	37	32	32	32	32	33	33	33	33
Minimum i	0.15	0.244	0.139	0.277	0.227	0.105	0.212	0.111	0.069	0.179	0.137	0.223
Maximum i	0.35	0.414	0.493	0.7	0.37	0.163	0.343	0.188	0.155	0.222	0.218	0.301
Median i	0.288	0.29	0.164	0.466	0.261	0.12	0.258	0.13	0.128	0.208	0.19	0.26
Mean i	0.284	0.291	0.177	0.467	0.265	0.122	0.256	0.133	0.126	0.207	0.187	0.256
MAD i	0.007	0.009	0.005	0.02	0.008	0.007	0.007	0.004	0.004	0.005	0.006	0.008
IQR i	0.012	0.014	0.009	0.032	0.011	0.011	0.012	0.007	0.006	0.008	0.008	0.012
Robust CV% i	4.2	4.7	5.4	6.8	4.3	9.1	4.7	5.6	4.9	3.9	4.3	4.7
Median f	0.29	0.291	0.164	0.467	0.26	0.12	0.26	0.13	0.128	0.208	0.19	0.26
Mean f	0.289	0.291	0.164	0.47	0.26	0.119	0.258	0.131	0.127	0.208	0.189	0.259
MAD f	0.004	0.006	0.003	0.016	0.005	0.0065	0.003	0.003	0.004	0.005	0.005	0.004
IQR f	0.007	0.009	0.005	0.021	0.008	0.01	0.005	0.005	0.006	0.007	0.007	0.008
Robust CV% f	2.4	3.2	2.9	4.6	3.1	8.3	2.1	3.7	4.3	3.6	3.8	3.1
Outliers	10	6	6	6	5	2	6	6	4	2	5	5
Stragglers	3	2	6	1	1	0	4	0	0	0	0	3

2013-14: Potassium (%K)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	33	34	33	33	33	33	33	33	34	34	34	34
Minimum i	1.47	0.283	1.05	0.04	2.2	0.851	1.24	0.36	0.444	0.594	0.425	0.362
Maximum i	8.77	18.4	44.7	7.5	5.12	1.35	3	0.641	0.885	5.4	1.81	0.53
Median i	2.47	0.382	1.57	6.61	3.65	0.99	2.22	0.413	0.779	4.69	1.56	0.436
Mean i	2.58	0.912	2.86	6.24	3.61	0.995	2.2	0.431	0.749	4.42	1.48	0.436
MAD i	0.08	0.013	0.06	0.2	0.17	0.047	0.09	0.021	0.023	0.285	0.088	0.012
IQR i	0.119	0.017	0.104	0.308	0.267	0.069	0.148	0.039	0.046	0.471	0.167	0.018
Robust CV% i	4.8	4.5	6.6	4.7	7.3	7	6.7	9.4	6	10	11	4.2
Median f	2.49	0.381	1.57	6.69	3.69	0.989	2.23	0.405	0.785	4.75	1.58	0.437
Mean f	2.49	0.378	1.58	6.67	3.69	0.984	2.25	0.412	0.777	4.75	1.55	0.438
MAD f	0.06	0.009	0.04	0.17	0.14	0.045	0.07	0.024	0.015	0.18	0.06	0.009
IQR f	0.089	0.015	0.074	0.267	0.226	0.059	0.107	0.028	0.029	0.319	0.119	0.013
Robust CV% f	3.6	3.9	4.7	4	6.1	5.9	4.8	6.9	3.7	6.7	7.5	3
Outliers	5	6	5	6	5	1	7	5	6	4	5	7
Stragglers	3	0	1	0	0	0	1	0	2	2	2	1

2013-14: Selenium (mg Se/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	15	15	15	15	13	13	13	13	13	13	13	13
Minimum i	1	5.43	5	1	4.28	5	5	3.16	1	1	1	1
Maximum i	1330	1350	920	1770	818	1530	146	231	180	2320	419	159
Median i	82.6	21	41.2	38.7	91.5	35	25	49.4	39.2	138	42.9	12.7
Mean i	161	124	98.1	162	175	162	36	68.9	48.7	359	68.1	32.4
MAD i	21.8	5	8.9	33.7	81.5	8	15.5	17	6	70	14.1	2.7
IQR i	35	7.49	13.3	52.8	179	40.4	28.9	47.4	10.3	243	24	15.9
Robust CV% i	42	36	32	140	200	120	120	96	26	180	56	120
Median f	82.6	21	40.6	36.3	82	34	20.9	41.1	39.2	110	42.9	12
Mean f	81.3	21	38.9	34.8	90.6	33.4	26.8	42.1	39.4	101	40	12.7
MAD f	17.6	2.1	7.9	16.7	72	2	11.8	21.1	4	44	4.8	1.4
IQR f	25.1	3.52	10.8	33.4	98.6	5	24.5	39.5	5.82	90.5	10.3	3.15
Robust CV% f	30	17	27	92	120	15	120	96	15	83	24	26
Outliers	2	3	3	2	2	3	1	2	3	3	2	4
Stragglers	2	2	0	0	0	2	0	0	1	0	2	0

2013-14: Silicon (%Si) NOT ASSESSABLE

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	7	7	7	7	6	6	6	6	6	6	6	6
Minimum i	0.037	0.002	0.007	0.04	0.027	0.066	0.030	0.034	0.008	0.043	0.035	0.004
Maximum i	0.173	44.2	0.044	0.529	1.27	2.01	2.54	0.503	0.046	1.23	1.13	0.02
Median i	0.048	0.005	0.014	0.049	0.058	1.75	0.927	0.067	0.038	0.081	0.084	0.012
Mean i	0.078	6.32	0.021	0.129	0.315	1.26	1.18	0.192	0.032	0.312	0.268	0.013
MAD i	0.011	0.003	0.006	0.003	0.023	0.185	0.849	0.022	0.006	0.035	0.035	0.003
IQR i	0.057	0.032	0.014	0.07	0.447	1.33	1.8	0.294	0.019	0.408	0.287	0.006
Robust CV% i	120	660	100	140	770	76	190	440	51	500	340	50
Median f	0.046	0.004	0.014	0.047	0.051	1.84	0.927	0.059	0.038	0.063	0.068	0.012
Mean f	0.051	0.003	0.021	0.047	0.047	1.84	1.18	0.056	0.032	0.064	0.096	0.013
MAD f	0.007	0.001	0.006	0.003	0.007	0.085	0.849	0.007	0.006	0.017	0.032	0.003
IQR f	0.021	0.002	0.014	0.005	0.020	0.187	1.8	0.021	0.019	0.029	0.080	0.006
Robust CV% f	45	51	100	11	39	10	190	36	51	46	120	50
Outliers	2	2	0	2	2	2	0	2	0	2	1	0
Stragglers	0	1	0	0	0	0	0	0	0	0	0	0

2013-14: Sodium (%Na)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	35	34	35	35	31	31	31	31	31	31	31	31
Minimum i	0.094	0.0001	0.042	0.052	0.638	0.006	0.038	1.17	0.048	0.68	0.433	0.001
Maximum i	0.319	0.427	0.315	0.301	1.12	0.035	0.059	2.17	0.117	2.73	2.4	0.022
Median i	0.113	0.001	0.052	0.216	0.74	0.009	0.042	1.36	0.096	2.34	0.689	0.008
Mean i	0.12	0.014	0.06	0.215	0.746	0.011	0.044	1.39	0.095	2.23	0.728	0.008
MAD i	0.005	0.001	0.003	0.013	0.036	0.001	0.002	0.06	0.003	0.12	0.03	0.001
IQR i	0.009	0.001	0.004	0.016	0.054	0.001	0.004	0.082	0.006	0.208	0.045	0.002
Robust CV% i	7.9	120	7.1	7.2	7.3	12	11	6	6.2	8.9	6.5	28
Median f	0.113	0.001	0.051	0.214	0.74	0.009	0.04	1.34	0.096	2.34	0.698	0.008
Mean f	0.113	0.001	0.052	0.214	0.733	0.0092	0.041	1.35	0.097	2.32	0.694	0.008
MAD f	0.004	0.001	0.002	0.006	0.035	0.001	0.001	0.05	0.002	0.11	0.024	0.001
IQR f	0.006	0.001	0.003	0.009	0.052	0.001	0.002	0.074	0.003	0.159	0.038	0.001
Robust CV% f	5.6	120	6.7	4.3	7	14	5.7	5.5	2.7	6.8	5.5	15
Outliers	5	5	4	5	1	6	4	2	9	4	6	7
Stragglers	2	0	1	5	0	0	5	2	2	1	1	3

2013-14: Sulfur (%S)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
No of results	32	31	32	32	29	28	29	29	29	29	29	29
Minimum i	0.136	0.02	0.102	0.209	0.504	0.1	0.17	0.18	0.005	0.438	0.136	0.1
Maximum i	0.255	0.313	0.491	0.437	0.72	0.132	0.237	0.3	0.198	0.592	0.203	0.135
Median i	0.184	0.085	0.132	0.359	0.59	0.104	0.21	0.205	0.17	0.54	0.181	0.113
Mean i	0.187	0.0934	0.145	0.355	0.592	0.108	0.208	0.206	0.164	0.535	0.179	0.114
MAD i	0.007	0.004	0.006	0.018	0.027	0.003	0.007	0.01	0.006	0.019	0.008	0.004
IQR i	0.010	0.006	0.008	0.027	0.041	0.006	0.011	0.013	0.010	0.037	0.013	0.006
Robust CV% i	5.6	7	5.9	7.5	7	5.9	5.3	6.1	5.7	6.9	7.2	5.2
Median f	0.184	0.085	0.132	0.359	0.59	0.103	0.21	0.205	0.17	0.541	0.184	0.112
Mean f	0.184	0.086	0.133	0.359	0.587	0.103	0.21	0.203	0.169	0.543	0.182	0.112
MAD f	0.005	0.003	0.005	0.014	0.027	0.002	0.006	0.010	0.006	0.018	0.006	0.004
IQR f	0.008	0.005	0.006	0.022	0.041	0.003	0.01	0.012	0.009	0.028	0.011	0.006
Robust CV% f	4.5	5.7	4.7	6.2	7	3.2	4.6	5.7	5	5.2	6	5.5
Outliers	5	5	6	3	1	5	4	1	5	2	1	3
Stragglers	1	2	0	2	0	2	0	0	0	1	1	0

2013-14: Zinc (mg Zn/kg)

Statistical parameters	Plant sample identification and values											
	October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
	ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
No of results	36	36	36	36	32	32	32	32	32	32	32	32
Minimum i	18.8	17.2	15.9	22.3	21.4	5.71	14.1	12.7	12.4	28.4	9.69	13.1
Maximum i	36.3	30.2	103	103	51.3	19.8	34.4	33.2	22.1	54.4	33.9	26.4
Median i	29.6	21	17.8	92.8	39.2	11.8	27.5	27.2	19.8	50.2	15.5	23.5
Mean i	29.5	21.2	20.4	90.3	39.2	11.9	27.6	27	19.3	49.3	15.6	23
MAD i	1.35	0.9	0.7	4.61	2.65	0.65	1.57	1.7	0.75	2.05	0.735	0.8
IQR i	2.08	1.3	1.15	6.65	3.97	1.2	2.32	2.56	1.3	3.11	1.19	1.29
Robust CV% i	7	6.2	6.5	7.2	10	10	8.5	9.4	6.6	6.2	7.7	5.5
Median f	29.6	20.9	17.8	93.4	39.2	11.8	27.2	27.1	20	50.2	15.6	23.7
Mean f	29.8	20.7	17.7	93.9	39.4	11.7	27.5	27.1	20	50.3	15.7	23.5
MAD f	1.3	0.735	0.7	4.2	2.45	0.4	1.3	1.1	0.55	1.95	0.4	0.6
IQR f	1.97	1.29	1.03	6.26	3.74	0.6	1.89	2.04	1.13	2.85	0.778	0.964
Robust CV% f	6.7	6.2	5.8	6.7	9.5	5.1	7	7.5	5.7	5.7	5	4.1
Outliers	3	4	3	2	2	6	2	2	5	2	6	3
Stragglers	0	0	0	1	0	3	2	1	1	0	2	2

4. Comments on Measurement Performance

Full 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 fora. It is appropriate, however, to make a few observations.

The grand median robust % CVs across the 12 samples by test in 2013-14, after the removal of "outliers" and "stragglers", ranged from 1.4 (for C) to 53.0 (for NO_3-N), which is a slightly narrower range than for corresponding tests in 2012-13 but similar to the range for 2011-12. Figure 1 presents, in ascending order, the grand median robust %CVs for the 2013-14 program. Although not identical, there are many similarities with the 2012-13 data with respect to the values for %CVs across the elements.

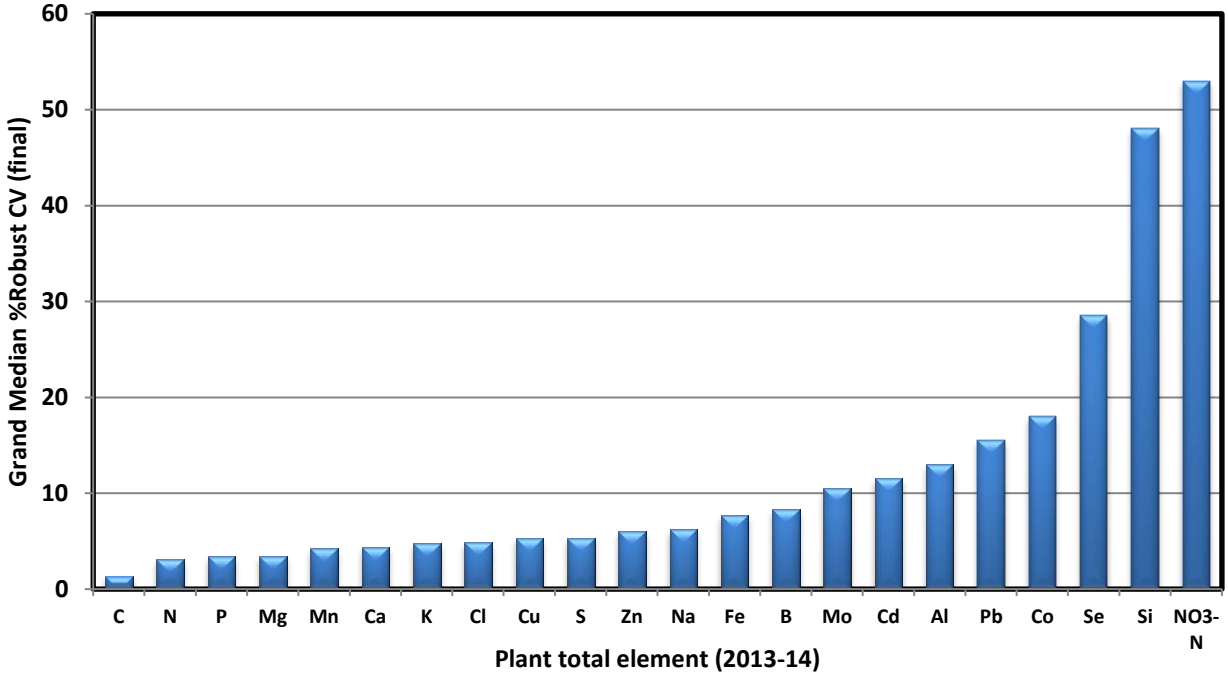

Figure 1. Grand median robust %CVs (final) for the 2013-14 plant-program years (note that Si was not assessed).

Across all 6628 reported plant test results in 2013-14, 14.3% were statistically assessed to be "outliers" (15.0% in 2012-13). The corresponding figure for "stragglers" was 4.4% (4.1% in 2012-13). For individual elements, the range of "outliers", expressed as percentages of the number of reported results for the particular test, ranged from 6.9% (Al) to 23.1% (Mo), while those for "stragglers" ranged from 1.3% (Si) to 9.8% (NO_3-N) of reported results for the specified test. No trends were seen between either the number of statistical "outliers", or the number of "stragglers", and the number of reported results per element.

Grand median robust %CVs across all plant tests (Si excluded) ranged from 5.0% (ASP 41) to 8.5% (ASP 102), with a grand median for the 12 samples of 6.15%, slightly less than was the case in the 2012-13 program. The sequence for the sample with the lowest to the highest grand median %CV (final) was 51, 23, 22=24, 53, 54, 104, 103, 101=52, 21, and 102 (all with the prefix ASP). Interestingly, test-sample ASP 22, which experienced difficulty during homogeneity testing, performed well across all tests. With Si included, the grand median robust CV was 6.5%, while lowest to highest rankings were similar but not identical.

Robust %CV are often influenced by analyte concentrations in predictable ways. For the 2013-14 Plant Program Year, the elements (tests) with robust %CV most influenced by analyte concentrations (highest %CVs at lowest concentrations) were, in decreasing order, Pb, B, Nitrate-N, Al, Na, Co, and Mo. Moreover, power functions describing

these 2013-14 relationships had highly-significant coefficients of determination (analogous to percent variance explained) ranging from 0.83 to 0.50.

And for numbers of outliers and stragglers, there were fair, continuous power-function relations (r^2 =0.38 and 0.29, respectively) with final robust %CVs, indicating that numbers of both outliers and stragglers tended higher when robust %CVs were low. In other words, it was more likely for a laboratory to record an outlier and/or straggler when the between-laboratory variance on a test-by-test basis was low.

Raw data and summary tabulations on the median and ranges of elemental concentration data covered by the 2013-14 program indicate that a reasonably wide range of concentrations applied to most total elements. Exceptions included Mg, and Ca to a lesser extent. Similar assessments also applied to total plant P and S concentrations. In addition, the spread of plant Si concentrations was lower than expected, although this assessment may reflect the presence of acid-soluble results as against true total S.

Appendix 1: List of laboratories (including contact details at the time) who participated in ASPAC's Plant ILPP in 2013-14, arranged by country

Name (position)	*Facility*	*Street and/or Postal Address*	*Country*	*Email*
Mr Steve Byrne (Laboratory Manager)	Vintessential Laboratories	32 Brasser Avenue, Dromana, VIC 3936 PO Box 2244, Dromana, VIC 3936	Australia	steve@vintessential.com.au
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Appendix 2: Homogeneity data and statistical assessments* for Total Plant %N (Dumas N) on the 12 test plant samples in 2013-14.

Sample name		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
Sub-sample													
1	Rep 1	3.45	1.19	1.78	4.75	3.10	1.63	2.96	2.66	2.74	3.40	1.55	1.64
	Rep 2	3.43	1.24	1.79	4.67	3.10	1.62	3.01	2.69	2.79	3.39	1.55	1.58
2	Rep 1	3.40	1.21	1.79	4.69	3.07	1.49	2.97	2.74	2.72	3.36	1.54	1.62
	Rep 2	3.42	1.2	1.80	4.7	3.09	1.52	2.96	2.72	2.69	3.38	1.54	1.55
3	Rep 1	3.43	1.23	1.79	4.72	3.08	1.49	2.98	2.72	2.7	3.42	1.56	1.62
	Rep 2	3.45	1.21	1.79	4.72	3.06	1.52	2.97	2.73	2.78	3.39	1.57	1.56
4	Rep 1	3.45	1.23	1.78	4.68	3.09	1.51	2.97	2.68	2.65	3.43	1.53	1.61
	Rep 2	3.44	1.21	1.79	4.69	3.08	1.50	2.97	2.68	2.74	3.38	1.52	1.59
5	Rep 1	3.43	1.23	1.79	4.69	3.12	1.51	2.96	2.74	2.73	3.39	1.55	1.62
	Rep 2	3.46	1.22	1.79	4.7	3.11	1.54	2.97	2.72	2.7	3.40	1.52	1.62
6	Rep 1	3.42	1.22	1.77	4.71	3.08	1.52	2.96	2.71	2.72	3.39	1.53	1.62
	Rep 2	3.41	1.2	1.77	4.58	3.10	1.55	2.98	2.71	2.78	3.40	1.52	1.54
7	Rep 1	3.44	1.22	1.79	4.77	3.13	1.53	2.97	2.69	2.68	3.40	1.56	1.58
	Rep 2	3.47	1.21	1.79	4.72	3.12	1.56	2.96	2.69	2.77	3.38	1.58	1.59
8	Rep 1	3.45	1.22	1.79	4.74	3.12	1.50	2.97	2.70	2.71	3.40	1.54	1.61
	Rep 2	3.45	1.22	1.78	4.69	3.09	1.53	2.99	2.71	2.75	3.39	1.56	1.58
9	Rep 1	3.46	1.22	1.80	4.82	3.10	1.54	2.98	2.71	2.77	3.40	1.53	1.60
	Rep 2	3.44	1.21	1.79	4.69	3.08	1.52	2.95	2.72	2.8	3.39	1.53	1.61
10	Rep 1	3.45	1.22	1.78	4.68	3.11	1.55	2.95	2.68	2.76	3.40	1.55	1.58
	Rep 2	3.43	1.22	1.78	4.79	3.08	1.54	2.98	2.69	2.77	3.40	1.60	1.59

Mean	3.44	1.22	1.79	4.71	3.10	1.53	2.97	2.70	2.74	3.39	1.55	1.60
Analytical SD	0.0002	0.0002	0.00003	0.003	0.0002	0.0004	0.0002	0.0001	0.0017	0.0002	0.0002	0.001
Sampling SD	0.0001	0	0.0004	0	0.0002	0.001	0	0.0003	0.00001	0	0.0002	0
SD proficiency data	0.104	0.037	0.059	0.089	0.119	0.044	0.104	0.103	0.052	0.074	0.059	0.059
Status	**H**	**H**	**H**	**H**	**H**	**Not 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.* **78**(1): 145-196. IUPAC Tech. Report.

** Sample ASP 22 did not meet homogeneity criteria for Nitrogen. Failed homogeneity using final SD. Reviewing data - 1st pass 0.11901 (outliers removed), 2nd pass 0.07413 (stragglers removed), final pass 0.04448. Passes homogeneity with second pass SD. This sample assumed as homogenous and fit for purpose.

Appendix 3: Statistical procedures used by ASPAC for its contemporary 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 7 or greater) laboratories. See references in the body of the report for more details. Also, the median (μ) is regarded as a good estimate of the true mean, while the MAD; i.e. 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 5% (two-tailed) with n-1 degrees of freedom]. Excluding any case when a laboratory reported no result (or a non-numeric value) [these were automatically excluded], 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 were subject to a second iteration involving a recalculation of the "ASPAC score". When again >2, the relevant laboratories were rated as "stragglers" (†).

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

Appendix 4: Plant analytical method codes and "Raw" program data for the 12 plant samples across three "rounds" in 2013-14.

The following tabulations of "raw" plant analytical data, as reported by participating laboratories, are listed in approximate alphabetical order by element after removal of unnecessary precision, this following completion of statistical tests. Precision adjustments were performed only to assist "raw" data presentation. Statistical "outliers" and "stragglers" are indicated by †† and †, respectively. All results are understood to be on an oven dry basis. Method Codes listed in the "raw data" tabulations are described in Tables 5 and 6.

Table 5. ASPAC method indicating codes (MIC) to allow laboratories to record the preparation, extraction and/or digestion techniques used for each plant test/element reported in this ILPP.A separate ASPAC Code (see Table 6) is required to identify 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 H, and final medium H_2SO_4	GA
Wet digestion - open system with HF, and final medium HNO_3 and /or HCl	GB

Preparation / Extraction / Digestion Technique	ASPAC MIC Code
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's method indicating codes for instrumental and/or analytical finishes (IA-MIC) to allow laboratories to record the instrumental and/or analytical finishes associated with each plant test/element reported in this ILPP. A separate ASPAC Code (see Table 5) is required to identify relevant preparation/extraction/digestion techniques.

Instrumental and/or analytical finish	ASPAC IA-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

Instrumental and/or analytical finish	ASPAC IA-MIC Code
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 (e.g. Leco)	37
Others (specify)	38

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14 Aluminium (mg Al/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
1006	DE-23									56.5	1130	47.2	5.89
1015	DE-24	92.1	3.88 †	36.8	1387	1240 ††	191 †	150 †	998 ††	44.8	985	48	51.1 ††
1017	DN-23	106	1.12	52.6	1352	713 ††	119	99.7	557	64.1	919	44.7	5.29
1107	DE-23	118	0.001	41.3	1394					74.3 †	1115	58.6	19.9 ††
2104	GJ-23	112	1.11	42.4	1305	866	115	103	592	55.8	980	50.2	5.22
2110	DE-24	94.8	1.1	33.7	1421	829	112	84.3	314	62.8	1010	42	4.9
2113	GJ-23					917	121	102	594				
2119	GJ-23	94.5	6.02 †	77.4 †	1200	914	109	90.6	326	27.2 †	805	18.6 †	3.91
2122	GI-23	107	1.4	36.9	1630 †	889	119	93.4	444	48.6	1080	36.1	2.51
2123	GG-23	84.1	0.55	36.2	1120	734	117	84.2	366	42.9	837	34.5	1.92
2123	DE-23	117	1.54	51.9	1239	807	135	99.5	611	74.1 †	938	63.2	3.63
22	DE-23	101	0.528	39.7	1249	945	145 †	115	611	60.2	1061	47.5	5.36
5000	DE-23	106	0.62	43.2	1253	1124 ††	141 †	114	639	58.1	1154	57.2	2.46
5000	GJ-23	116	1.65	52.3	1210	883	130	107	422	53.7	948	51.4	2.63
5000	GJ-23	115	0.81	40.9	1270	835	126	102	606	51.7	952	49.9	2.13
5001	ZZ-23	110	1.7	39	1270	920	120	95	500	55	980	45	2.6
5001	DN-23	109	1.06	46.9	1363	756	117	93	531	51.9	931	36.2	3.15
5001	DE-23	116	2.21	45.4	1330	970	138	115	593	64	1140	49	2.94
5001	DE-23	117	1.88	43.5	1265	838	120	102	507	72.6 †	990	42.9	6.5 †
5002	GJ-23	90.5	0.1	34.5	1271	859	128	85.4	463	54.8	976	38.2	7.54 †
5002	DN-23	106	0.523	44.1	1360	922	124	103	439	58.5	1050	41	2.44
5002	AD-23	82.4	0.36	26.3	1099	751	97.7 †	81.9	439	42.7	843	32.3	0.424
5003	DE-23	88.6	1.63	36.6	1221	882	126	101	447	54.5	1053	36.8	2.45
5003	GJ-23									141 †	1082	32.1	33.3 ††

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Boron (mg B/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10069	GH-23	26.1	3.78 †	16.7	45.2	30.9	151 †	12.2	44.3	21.4	22.6	11	0.368
10156	DE-24	21.1	2.65	12.5 †	40	36.7	268 †	18	60.2 ††	18.9	21	9.37	3.18 ††
10173	DN-23	23.5	2.24	16.9	40	29.1	176	21.8 †	43.5	20	20	9.8	0.72
11035	GG-23	26		18	41	29	180	15	45				
11079	DE-23	25	2.08	17.4	42.8					20.9	19.8	11.5	1.22
20204	GJ-23	17.5 †	2.48	7.5 †	41	30.6	183	13.8	45.3	24.5	22.4	7.63 †	1.19
21043	GJ-23	26.5	3.31	19.2	46.6 †	32.6	179	18.3	49.9	24.7	20.9	11.1	2.77 ††
21100	DE-24	23.9	1	17.2	40.3	28.9	180	14.6	44.5	21	20.7	9.84	0.495
21138	GJ-23	24.1	2.11	16.8	42.8	30.8	172	13.2	46.6	19.6	19	9.24	0.2
21195	GI-23	27.9	10.9 †	21 †	31.3 †								
21196	GJ-23	22.3	1	15.4	37.3	33.9	190	17.1	50	17.5 †	23.3	12.1 †	3.8 ††
21229	GI-23	29.9 †	2.79	20.2 †	48.3 †	32.1	191	17.7	50.1	23.5	22.6	11.9	0.923
21230	GG-23	26.2	3.57 †	19.3	42.3	29.7	173	14.4	44.9	20.1	17.5 †	10.1	1.2
21232	DE-23	26	3.4	18.6	44.5	26.7	154 †	17.5	40.6	19.2	18.6	9.5	0.06
22	DE-23	24.1	1.99	16.4	39.2	31.8	206	17	50	21.6	20.7	10.4	0.409
50004	DE-23	24.4	1.45	15.5	42.1	34.9	190	17.2	50.7	20.4	22.4	9.32	0.839
50005	GJ-23	22.2	2.34	17	40.8	58.5 ††	191	42 †	73.4 ††	21.9	20.8	10.6	1.05
50008	AD-23	23.4	1.44	16.7	36 †	29	182	14.2	45.8	23.3	14.6 †	8.23 †	1.15
50009	GI-23	26.6	2.31	18.9	41.3	32.1	201	16.8	50.2	24.2	21.4	10.5	0.56
50011	ZZ-23	25.1	2.3	17	40.4	29	187	15.1	46	22.4	19.8	9.75	0.85
50012	DN-23	23.7	1.35	15.5	39.3	31.1	177	15.5	44.7	22.2	19.9	10.2	0.493
50014	DE-23	26.9	1.79	18.2	44.1	33.4	201	16.5	50.9	22.6	22.3	10.7	0.593
50016	GC-23	24.1	1.94	16.5	39	30.8	189	15.6	46.7	21.8	20.7	9.78	0.53
50017	DE-23	25.8	2.6	17.3	42.6	28.2	182	13.7	44.6	22.6	21.6	10.7	0.655
50020	ZZ-38	28.2	7.71 †	21 †	41.7	35	160	19.5	49	60.2 †	55.5 †	41.4 †	33.2 ††
50024	GJ-23	20.8	0.1 †	14.5	30.5 †	25.1	130 †	2 †	42.5	17.9	13.4 †	12.7 †	2.2 ††
50025	GJ-23	21.2	4.17 †	17.6	37.5	31	167	17.9	49				
50027	DN-23	24.1	2.19	17	39.7	30.9	184	16.2	47.1	21.9	20.2	10	0.667
50029	AD-23	26.5	2.3	19	40.8	32.6	198	21.9 †	52.9	22.1	19.7	10.5	0.835
50032	DE-30	28	6.6 ††	22 ††	48 †	38 ††	166	26 ††	54	30 ††	38 ††	19 ††	7.7 ††
50037	DE-23	25.7	2.24	16.9	41.6	30.9	187	17.5	47.6	22.1	19.8	10.6	1.1

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Cadmium (µg Cd/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10156	DE-24										835		16.5
10173	DN-23	39.6	0.5	24.5	1710	536	3.29 †	106	257	16.3	927	16.5	14.8
11079	DE-23	32.5	15.1 ††	42.4	1461					8.26 ††	857	23.5	21.2
21100	DE-24	44.8	2.05	16.3	1566	604	14.9 †	112	254	18.3	896	18.9	15.5
21196	DE-23	27.5	4.91	12.7	1120 †	598	100 †	114	252	10	11300 ††	19.6	125 ††
21230	GG-24	43.7	2.4	29.3	1590	607	7.59	118	264	30.9 ††	874	32.9 ††	21
50004	DE-24	38.7	1.21	37.6	1614	647	4.95	246 ††	278	14.2	818	16.1	15.2
50005	GJ-23	36.8	4.01	46.8	1420	543	6.01	108	241	16.6	740	20.1	16.7
50009	GJ-24	38.5	1.77	71.6 ††	1540	627	6.36	114	276	14.9	939	17.3	15.2
50011	ZZ-24	39	3	20	1462	568	6.5	140 ††	250	17	922	16	16
50012	DN-24	27	0.794	42.7	1696								
50014	DE-23	47.7	10.1 ††	37	1640	635	6.2	114	273	18.3	996	22	21.7
50024	GJ-23	1 †	1	10	1176 †	460 ††	10 †	65 ††	190 ††	31.4 ††	826	27.5	83.1 ††
50037	DE-24	35.2	3.68	33.1	1472	582	6.4	141 ††	236	16.6	723	18.8	17

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Calcium (%Ca)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10069	GH-23	0.761	0.016 ††	0.581	1.445	2.44	1.385	0.775	1.084	0.908	2.29	0.323	0.03
10156	DE-24	0.731	0.009 ††	0.588	1.41	3.24 ††	1.91 †	0.965 ††	1.39 ††	0.77 ††	2.07	0.28 †	0.035 ††
10173	DN-23	0.765	0.006	0.603	1.485	2.13 ††	1.37	0.768	0.991	0.95	2.43	0.32	0.03
10181	GF-38	0.81	0.018 ††	0.648	1.54	2.42	1.47	0.77	1.11	0.921	2.42	0.331	0.031
11035	GG-23	0.77		0.6		2.4	1.3 †	0.67 ††	1				
11079	DE-23	0.83	0.006	0.676 ††	1.27					0.999 ††	1.88	0.364 ††	0.035 ††
20204	GJ-23	0.673 †	0.007	0.566	1.36	2.38	1.43	0.759	1.02	0.888 †	1.98	0.27 ††	0.031
21043	GJ-23	0.741	0.005	0.605	1.53	2.37	1.33	0.707 †	0.989	0.944	2.2	0.299	0.026 ††
21100	DE-24	0.776	0.009 ††	0.624	1.49	2.3	1.42	0.751	1.06	0.927	2.12	0.311	0.031
21138	GJ-23	0.797	0.005	0.637	1.39	2.44	1.45	0.774	1.09	0.914	2.11	0.319	0.028
21190	AD-09	0.727	0.006	0.596	1.39	2.30	1.49	0.774	1.115	0.937	2.17	0.246 ††	0.03
21193	GJ-11	0.76	0.006	0.065 ††	1.25	2.2	1.34	0.77	1.1	0.93	1.92	0.34	0.029
21195	GI-23	0.817	0.005 †	0.635	1.47								
21196	GJ-23	0.676 †	0.006	0.651	1.24	2.54 †	1.34	0.803	0.999	0.542 ††	1.91	0.221 ††	0.025 ††
21229	GI-23	0.795	0.006	0.639	1.56	2.32	1.44	0.744	1.04	0.915	2.03	0.312	0.029
21230	GG-23	0.731	0.005 †	0.616	1.36	2.03 ††	1.29 †	0.61 ††	0.908 ††	0.799 ††	1.56 ††	0.277 ††	0.030
21232	DE-23	0.74	0.006	0.605	1.38	2.27	1.4	0.8	1.04	0.93	2.07	0.29 †	0.03
21234	GH-09	0.84	0.01 ††	0.69 ††	1.57	2.95 ††	2.28 †	1.43 ††	1.75 ††	1.05 ††	2.3	0.35 †	0.03
22	DE-23	0.739	0.005	0.576	1.32	2.5	1.55 †	0.787	1.12	0.979 †	2.21	0.327	0.031
50004	DE-23	0.761	0.005	0.605	1.31	2.93 ††	1.8 †	0.967 ††	1.35 ††	1.01 ††	2.46	0.356 †	0.033
50005	GJ-23	0.696	0.006	0.575	1.35	2.55 †	1.43	0.795	1.1	0.937	2.31	0.271 ††	0.032
50008	GJ-23	0.751	0.006	0.602	1.44	2.35	1.46	0.759	1.05	0.973 †	2.16	0.32	0.031
50009	GI-23	0.765	0.006	0.616	1.28	2.36	1.5	0.776	1.08	0.887 †	2.11	0.325	0.028
50011	ZZ-23	0.786	0.006	0.61	1.32	2.3	1.45	0.75	1.05	0.94	2.08	0.313	0.03
50012	DN-23	0.772	0.006	0.619	1.46	2.34	1.43	0.742	1.05	0.929	2.2	0.312	0.028
50014	DE-23	0.815	0.006	0.632	1.4	2.58 ††	1.53	0.805	1.14	0.913	2.25	0.32	0.03
50016	GC-23	0.782	0.005	0.59	1.37	2.38	1.44	0.756	1.06	0.921	2.26	0.331	0.028
50017	DE-23	0.742	0.006	0.577	1.43	2.38	1.45	0.776	1.07	0.968	2.25	0.346	0.046 ††
50020	ZZ-38	0.725	0.008 †	0.592	1.42	2.35	1.35	0.691 ††	1.01	1.03 ††	2.37	0.328	0.031
50021	GJ-23	0.663 †	0.006	0.568	1.18								
50024	GJ-23	0.753	0.005	0.603	1.27	2.29	1.41	0.736	1.04	0.929	2.13	0.322	0.03
50025	GJ-23	0.748	0.004 †	0.601	1.45	2.35	1.42	0.736	1.057	0.93	2.2	0.335	0.029
50027	DN-23	0.782	0.007	0.624	1.47	2.33	1.43	0.753	1.03	0.942	2.14	0.319	0.029
50029	AD-23	0.82	0.01 ††	0.688 ††	1.35	2.35	1.45	0.783	1.11	0.952	1.92	0.313	0.03
50032	DE-11	0.84	0.003 ††	0.67 ††	1.41	2.26	1.31 †	0.73	1.03	0.85 ††	2.14	0.29 †	0.03
50037	DE-23	0.781	0.006	0.606	1.37	2.44	1.46	0.775	1.03	0.932	2.17	0.315	0.03
50038	GJ-23	3.16 †	4.15 ††	6.46 ††	0.073 †					0.672 ††	2.23	0.241 ††	0.026 ††

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Carbon (%C)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10156	CA-37	44.6	44	50.7	39.9	39.8	45.7	43.1	44.8	51.3	37.6	43.5	43.6
10173	CA-37	45.5	45.27 †	51.4	40.4	40.3	45	44	44.8	52.4 ††	38.2	44 †	44.8 †
10181	CA-37	44	43.5	49.8	39	40.7	45.3	44	45.4	50.7	37.2	42.9	43.4
11079	CA-37	45.5	45.6 ††	51.3	40.7	41.2	45.7	44.5	46.4	51.4	37.4	43.6	44.1
20204	CA-37	44.5	43.5	49.9	39.1	39.3	44	43.1	43.9	50.2 †	36.6	42.1 †	42.2
21100	CA-37	44	42.9	50.6	39.6	38.2	43	42	42.5	50.9	37.9	43.3	43.2
21138	CA-37	44.1	43.4	49.7	39.6	39.9	44.8	42.8	45				
21230	CA-37	43.8	42.5	49.7	38.4 †	40.3	44.8	43.5	45.1	51.1	37.2	43.1	43.9
21232	CA-37	43.3	42.2	49.6	37.7 †	39.5	44.9	42.5	41.7 ††				
22	CA-37	42.4 †	40.9 ††	48.5 †	37.5 †	39.9	44.6	43.5	45	51	36.9	42.8	42.6
50004	CA-37	44.1	43.6	50	39.2	39.1	44.1	42.7	43.7	49 ††	36.9	42.7	43
50005	CA-37	44.8	43.5	51.3	40.1	39.1	43.2	42.9	43.5	51	37.2	43	42.9
50008	CA-37	43.6	43.1	49.2	38.7 †	39.7	44.2	43	44.5	51.2	37.3	43.3	44
50011	CA-37	44.1	43.6	49.9	39.6	38.5	43.3	42.5	43.3	51.1	37	43	43
50012	CA-37	44.1	43.3	50.7	40	37.5 ††	42.6 †	41.1 ††	42 †	51.3	37.7	42.9	43.1
50014	CA-37	44.5	44.3	50.4	39.9	40.3	45.2	43.8	45.3	51.1	37.2	43.1	43.6
50017	CA-37	44.7	44.4	49.7	39.9	40	44.5	43.3	44.9	50.3	37.2	43	43.3
50021	CA-37	44.8	43.8	50.7	40.4	39.8	44.5	43.2	44.3				
50024	CA-37	44.8	44.6	50.5	40.1	40.3	44.7	43.8	45.2	50.9	37.5	43.1	43.7
50029	CA-37	42.3 †	41.6 †	47.4 ††	38.2 †	39	43.5	42.8	43.5	49.3 ††	36.1 ††	40.9 ††	41.8
50032	CA-37	40.3 †	36.9 ††	47.2 ††	34.9 †	38.7	42.7 †	41.9	42.6	47.1 ††	35.2 ††	40.4 ††	40.2 ††
50037	CA-37	44.5	43.9	49.8	39.8	39.7	44.6	42.9	44.2	50.7	36.8	42.3	42.7
50038	CA-37	44.4	44.1	50.2	39.8								

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Chloride (mg Cl/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10069	BA-31	8040 †	500 †	4375 ††	6935 †	26300	3700 †	4150 ††	9750				
10173	CA-27	4700	300 †	2400	4900	24700	2700	2950	8600	5100	36400	18500	1300 †
20204	BB-27	4612	45 ††	2312	4720	26500	2840	3330	9020	5223	37140	19020	1520
21043	BB-31	5120	433	2468	4707	26820	2853	3009	9469	5171	36504	17883	1456
21100	BB-31	7086 †	356	3246 †	6664 †	23700	3390 †	3880 †	10700 ††	0.637 ††	3.27 ††	1.86 ††	0.128 ††
21138	BA-32					26300	2980	3270	9220	5470	36400	18500	1630 †
21193	BB-38	4708	349.6	2158	4034 †	2.55 ††	0.22 †	0.26 ††	0.87 ††				
21195	GI-23	22400 †	982 ††	17600 ††	17700 †								
21196	BB-31	0.494 †	0.409 ††	0.449 ††	0.486 †	27600	2260 †	2632 †	8180	5398	34278	17318	1276 †
21229	BB-31	5276	424	2257	4710	25108	2835	3048	8845	4944 †	33970	16227	1371
21232	BB-31	4820	440	2300	4240 †	21450 ††	1905 †	2340 ††	7800 †	5000 †	31000 ††	16000	1500
22	BA-32	5150	399	2442	4799	26031	2962	3176	9204	5346	36085	18309	1501
50005	BB-32	0.534 †	422	2770	4850	25600	2850	3390	9400	5380	35400	17700	1490
50009	BA-23	5420	382	2570	4890	27500	3000	3280	9710	5390	36600	18100	1480
50011	BB-31	5400	415	2500	4700	25000	2900	3150	8400	5250	36000	18300	1450
50012	BB-38	5805	334	2620	5280 †	24500	3000	3250	9050	0.536 ††	3.54 ††	1.7 ††	0.133 ††
50014	DE-23	5600	400	2700	5200	23595	2925	3215	9180	5260	37600	19000	1380
50016	BA-32	5470	413	2520	4940	26500	3020	3230	9350	5350	37000	18600	1480
50017	BB-31	5135	376	2272	4973	25074	2689	2833	9072	5414	37100	18196	1428
50020	ZZ-38	6050	506 †	3170	6120 †	26200	3350 †	3510	9010	5630	35900	17400	1650 †
50027	BB-32	5840	1180 ††	2130	3060 †	30300 ††	1150 †	1150 ††	10200	5280	35200	17200	2350 ††
50029	BB-31	5937	391	3134	5708 †	23516	3636 †	3929 †	8320	5764 ††	39089 †	15484 †	1358
50032	BB-27	4500	1300 ††	3000	6400 †	21000 ††	5200 †	5700 ††	6800 ††	3500 ††	27000 ††	13000 ††	2600 ††
50037	BB-32	5354	406	2404	4802	26850	2940	3223	9530	5358	35320	17682	1465

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Cobalt (µg Co/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10069	GH-23	162	12 ††	44.5 ††	298								
10156	DE-24										126	481	
10173	DN-23	142	1.56	28.7	285	183	62.8	46.1	353	870 ††	180	620	10
11079	DE-23	119 †	34.7 ††	0.0008 ††	295					19.3	123	732	40.1 ††
21100	DE-24	141	3.91	36.9	310	165	51.2	45.7	402	36.2	209	604	9.43
21196	GJ-23	162	1	121 ††	349 †	179	42.8	52.6	423	78.6 ††	140	400 ††	9
21229	GI-23	190 †	3.07	29.7	396 †	153	65.7	53.4	348	24.3	161	658	4.23
21230	GG-24	161	3.59	32.9	324	279 ††	137 †	92.8 ††	454	28.3	174	654	10.7
21232	DE-23	120 †	1	10 ††	270 †								
22	DE-24	165	2.83	29	302	150	59.2	49.1	413	18.9	170	672	5.15
50004	DE-24	149	14.8 ††	35	306	123	45.9	48	429	22.4	154	590	0.458
50005	GJ-23	114 †	3.63	16.3 ††	298	125	66	49	299	24.3	143	507	5.01
50009	GJ-24	166	2.31	31.4	304	170	60.5	48	390	22.9	191	682	7.56
50011	ZZ-24	142	3	30	310	190	70	55	380	35	230	605	5
50012	DN-24	104 †	1	33.1	325								
50014	DE-24	165	3.2	30	310	155	46.8	40.6	380	25.7	184	661	9.2
50024	GJ-23	167	25 ††	75 ††	306	209	93 †	56	371	64 ††	258	599	19
50027	DN-23	138 †	1	15 ††	370 †	136	48.6	51.3	333	10	158	619	24.1 †
50029	AD-23	168	8.33 †	35	242 †	112	51.7	49.5	339	28.8	115	610	20.5
50037	DE-24	168	3.52	55.6 ††	298	292 ††	65.2	74 ††	303	24.5	262	505	4.31

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Copper (mg Cu/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10069	GH-23	6.35	1.81 †	7.5	11.2 †	16.1	13.4	11.9	11.7	6.33 ††	24.6	4.37	3.59
10156	DE-24	8.08 †	3.88 ††	7.06	8.74	19.9 ††	17.4 †	13.6 ††	14.3 ††	6.6 ††	26.1	3.89 †	3.54
10173	DN-23	5.21 †	1.97 ††	6.11 ††	8.24	13.8	12.3	10.4	10.9	7.6	26	5	3.9
11035	GG-23	6.2	1.3	7.2	8.8	16	14	11	12				
11079	DE-23	6.24	1.34	7.43	9.12					8.41 †	29.9	5.60 ††	4.18
20204	GJ-23	5.01 †	1.65 †	5.3 ††	8.93	11.9 ††	13.5	12.9 ††	8.31 ††	8.14	23.5	4.2	4.1
21043	GJ-23	5.99	1.45	7.16	9.3	14.9	12 †	10.4	10.4	7.02 †	24.7	4.15	3.3 †
21100	DE-24	6.27	1.44	7.61	9.14	15.4	13.8	10.8	11.1	7.55	26.8	4.87	3.98
21138	GJ-23	6.21	1.44	7.55	10.6 †	16.3	13.3	11.1	11.5	7.43	25.2	4.55	3.81
21190	AD-13	7.68 †	1.8 †	7.98	10.1	17.7	10.8 †	10.5	14.9 ††	8.08	27.9	2 ††	4.1
21193	GJ-11	7.65 †	4.25 ††	7.4	10.9 †	16.5	14.3	11.0	10.8	7.58	26.6	5.43 †	5.01 ††
21195	GI-23	6.06	0.892 ††	7.92	9.74								
21196	GJ-23	5.95	0.903 ††	7.29	8.98	17.7	14.9 †	11.6	11.9	3.88 ††	26.4	2.94 ††	2.74 ††
21229	GI-23	6.39	1.46	7.65	9.39	15	13.1	11.1	11.3	7.82	27.3	4.87	3.95
21230	GG-24	6.48	1.72 †	7.9	9.32	13.9	12.1	10.2	10.7	7.13 †	23.6	4.57	3.76
21232	DE-23	6.73 †	1.86 †	7.81	10.3 †	13.2 ††	10.7 †	8.2 ††	8.36 ††	8.7 ††	24.7	4.42	3.55
21234	GH-09	6.28	1.44	7.59	9.96	7.49 ††	6.76 †	5.46 ††	5.44 ††	4.22 ††	14.2 ††	2.65 ††	1.94 ††
22	DE-23	6.15	1.59	7.11	8.7	16.9	14.2	11.9	12.3	7.73	27.8	5.03	4.18
50004	DE-23	6.17	1.43	7.16	9.15	17.2	14.6	12	12.5	7.46	30.3	4.92	3.25 ††
50005	GJ-23	6.12	1.49	7.35	8.61	14.9	13.2	11	10.6	7.54	25.9	4.7	3.92
50008	GJ-23	6.09	1.68 †	7.27	8.78	14.6	12.2	10.6	10.5	7.59	25.6	4.79	4.26
50009	GJ-23	6.37	1.56	7.59	8.64	16.3	13.9	11.4	11.8	7.9	27.1	4.84	4.19
50011	ZZ-23	6.3	1.5	7.1	8.6	15.2	13.3	10.9	10.9	7.84	26.8	4.67	4
50012	DN-23	6.09	1.43	7.3	8.32	14.4	13	10.3	11	7.81	22.9	4.7	3.93
50014	DE-24	7.13 †	1.74 †	8.25 ††	9.8	15.8	13.7	11	11.7	8.29 †	27.8	4.96	3.94
50016	GC-23	5.9	1.4	6.99	8.44	16.2	13.4	11.2	11.7	7.63	29.1	4.86	3.82
50017	DE-23	6.09	1.47	7.2	9.27	16.2	13.5	11.4	11.6	8.04	30.1	4.73	3.26 ††
50020	ZZ-38	6.95 †	2.36 ††	8.68 ††	10.1	19.1 ††	16.9 †	12.7 †	12.7	8.47 †	29.7	6.36 ††	6.36 ††
50021	GJ-23	5.25 †	1.40	7.75	8.28								
50024	GJ-23	5.74	1.17 †	7.31	8.1	14.5	12 †	10.2	10.4	7.15 †	26.4	4.49	3.6
50025	GJ-23	5.93	1.47	6.7	8.6	16.2	13.8	11.0	11.6	7.7	27	4.6	4
50027	DN-23	5.95	1.42	7.18	9.42	15.8	13.2	10.8	11.2	7.65	26.3	4.67	3.99
50029	AD-23	5.72	0.44 ††	7.86	2.88 †	15.1	10.8 †	8.77 ††	11.4	7.72	21.9 †	1.59 ††	2.69 ††
50032	DE-11	6.6	1.2 †	7.9	10.5 †	15.2	12.5	10.4	10.7	7.91	27.2	5.06	3.74
50037	DE-23	6.21	1.44	7.14	8.75	14.9	13.7	11.37	11.4	7.6	23.7	4.5	3.96
50038	GJ-23	9.36 †	7.99 ††	12.9 ††	3.32 †					9.96 ††	29.9	3.26 ††	3.99

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Iron (mg Fe/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10069	GH-23	170 †	19.1	56.5	532	632	81.8	156	454	64.9	425	64.9	27.6
10156	DE-24	180 †	89.1 ††	106 ††	474	702 ††	111 †	165 †	594 ††	54.3 †	407	49.5 ††	34.6
10173	DN-23	130	14.8	48.6	495	468	89.7 †	129	400	66	480	62	28
11035	GG-23	120	17	44	390	410	57 †	120	300 ††				
11079	DE-23	141	17.3	53.8	495					78.2	470	85.9 †	37.2 ††
20204	GJ-23	69.5 †	20.2	49.7	465	337	75.6	136	289 ††	68.2	318	64.6	31.3
21043	GJ-23	168 †	17.6	69 ††	608 †	567	96.6 †	152	431	88.5 ††	509	74.3	32
21100	DE-24	133	12.6 ††	54.9	527	464	72.5	118	364	75.5	492	69.5	22.1 ††
21138	GJ-23	144	18.7	54.7	441	556	85.6	142	400	65.6	490	70.3	29.1
21190	AD-13	86 †	16.9	33.8 ††	336 †	333	63.1 †	117	327 †	46 ††	304 †	32.6 ††	12.2 ††
21193	GJ-11	120	19.4	48.6	371 †	379	63.7 †	119	342	73.8	345	76.8	37.8 ††
21195	GI-23	139	14.2	59.5	617 †								
21196	GJ-23	163 †	32.2 ††	122 ††	476	546	79.1	158	409	43.3 ††	373	44.7 ††	28.4
21229	GI-23	144	19.9	53.5	491	464	75.9	137	421	67.9	430	70.1	30.9
21230	GG-23	104 †	6.26 ††	45.3	401	398	64.3 †	92.9 ††	333	48.5 ††	332	38.9 ††	8.57 ††
21232	DE-23	180 †	18.4	55.9	431	514	79.7	137	460	82.5 †	547	82.6	31.4
21234	GH-09	154	13.9	55.6	500	315	44.4 †	76.7 ††	221 ††	49.1 ††	302 †	40.3 ††	14.4 ††
22	DE-23	124	16.2	46.9	429	547	86.8	155	456	68.7	459	70.8	31.6
50004	DE-23	129	14.5	46.3	426	712 ††	98 †	184 ††	593 ††	69.9	538	78	27.7
50005	GJ-23	135	16.8	48.3	467	460	77.1	131	385	68.7	418	88.9 ††	30.2
50008	GJ-23	132	18.1	50.1	450	475	76.7	132	408	68.4	447	70.7	31.2
50009	GJ-23	143	18	52.3	471	545	85.2	145	447	70.4	493	71.6	31.3
50011	ZZ-23	140	17	48	470	490	73	136	438	69.6	455	73	31
50012	DN-23	140	17.1	52.3	498	510	76.7	134	434	71.5	442	66.6	29.5
50014	DE-24	149	18.3	52.9	474	540	74	138	438	65.2	485	66.5	26.6
50016	GC-23	132	18	49.5	472	530	76.7	139	417	67.5	474	70.6	30.6
50017	DE-23	134	16.1	49.9	462	516	77.3	142	434	72.3	535	71.3	28.2
50020	ZZ-38	120	18.6	48.2	392	430	63.3 †	121	329 †	63.3	389	65.2	26.1
50021	GJ-23	122	23.8 ††	54.3	411								
50024	GJ-23	130	14.7	53.2	450	482	79.7	131	413	62	444	65.3	29.7
50025	GJ-23	133	17.9	53.5	470	497	72.5	132	422	63	456	72	26.5
50027	DN-23	141	18	53.4	440	482	78	145	412	73.6	419	72.9	31.9
50029	AD-23	107	14.7	42.4	302 †	302	51.5 †	106 †	289 ††	59.6	211 ††	45.3 ††	32
50032	DE-11	133	25 ††	66 ††	423	359	65 †	120	334	66.4	394	61.5	28.9
50037	DE-23	134	17.3	48.5	476	486	76	143	404	68.9	419	68.6	30.6
50038	GJ-23	220 †	274 ††	625 ††	177 †					51.2 ††	527	150 ††	87.7 ††

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Lead (µg Pb/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10173	DN-23	90.8	4.85	55.6	624 †	291	87.2	84.2	413	90	302	41	11
21100	DE-24	115	28.5	106 ††	478	334	96.8	112	391	127	323	67.1	30.5
21196	DE-23	90.8	60.2 ††	116 ††	278 †	526 ††	492 †	280 ††	594 ††	1600 ††	1690 ††	944 ††	902 ††
21230	GG-24	99.6	13.3	58.6	385	279	97.9	129	353 †	115	351	91.5	79.6 †
50004	DE-24	100	12.3	63.5	414	450 †	136	128	669 ††	107	322	76.4	25.5
50005	GJ-23	171 †	23.2	66.5	451	144 ††	121	196 ††	174 ††	111	102 ††	62.9	34.1
50009	GJ-24	100	8.19	52.2	415	337	94	97.7	450	82.8	339	24.6	4.5
50011	ZZ-24	120	19	70	463	350	112	126	435	108	318	54	35
50012	DN-24	67.7	0.605	53.4	477								
50014	DE-23	105	10.3	62	450	350	91	98	428	160 †	363	38.1	9.73
50024	GJ-23	67	65 ††	126 ††	171 †	86 ††	183 †	51	267 ††	124	29 ††	4	18
50037	DE-24	142 †	23.2	63.3	460	374	110	115	432	108	235 †	38.7	34.1

. Code #	Method Codes	Plant sample identification and values for 2013-14: Magnesium (%Mg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10069	GH-23	0.247 †	0.092	0.083	0.69 †	0.406 †	0.307	0.24	0.314	0.215	1.087	0.238	0.086
10156	DE-24	0.206	0.095	0.082	0.693 †	0.529 ††	0.402 †	0.297 ††	0.433 ††	0.167 ††	1.03	0.178 ††	0.079
10173	DN-23	0.214	0.099	0.082	0.563	0.333	0.284	0.214	0.281	0.2	1.06	0.23	0.09
10181	GF-38					0.332	0.267	0.193 ††	0.277	0.216	1.18	0.227	0.085
11035	GG-23	0.22	0.09	0.08	0.57	0.38	0.28	0.21	0.29				
11079	DE-23	0.218	0.093	0.082	0.556					0.201	0.914 ††	0.233	0.083
20204	GJ-23	0.198	0.095	0.078	0.605	0.369	0.288	0.231	0.296	0.209	1.084	0.224	0.089
21043	GJ-23	0.214	0.095	0.081	0.618 †	0.344	0.259 †	0.207	0.276	0.202	1.09	0.213 †	0.075 ††
21100	DE-24	0.214	0.099	0.084	0.559	0.358	0.297	0.226	0.294	0.218	1.08	0.238	0.086
21138	GJ-23	0.22	0.098	0.083	0.589	0.357	0.284	0.217	0.29	0.203	1.01	0.223	0.081
21190	AD-13	0.204	0.101	0.091 ††	0.616	0.281 ††	0.247 †	0.203	0.253 ††	0.198	0.328 ††	0.199 ††	0.086
21193	GJ-11	0.21	0.09	0.08	0.58	0.4 †	0.3	0.22	0.31	0.178 ††	1.034	0.201 ††	0.07 ††
21195	GI-23	0.198	0.089	0.085	0.685 †								
21196	GJ-23	0.225	0.094	0.086	0.578	0.406 †	0.33 †	0.243	0.327 ††	0.131 ††	1.07	0.174 ††	0.077 ††
21229	GI-23	0.227	0.101	0.083	0.619 †	0.346	0.287	0.221	0.294	0.208	1.2 †	0.235	0.084
21230	GG-23	0.212	0.092	0.081	0.563	0.318	0.271	0.197	0.274	0.199	0.87 ††	0.212 †	0.086
21232	DE-23	0.2	0.084	0.079	0.54	0.35	0.28	0.22	0.28	0.2	1.04	0.21 †	0.09
21234	GH-09	0.22	0.1	0.08	0.59	0.29 ††	0.27	0.21	0.26	0.18 ††	1.09	0.18 ††	0.08
22	DE-23	0.21	0.091	0.076	0.557	0.377	0.302	0.236	0.315	0.224	1.2 †	0.251 †	0.095 ††
50004	DE-23	0.215	0.094	0.079	0.553	0.404 †	0.328 †	0.258 ††	0.341 ††	0.232 †	1.21 †	0.249 †	0.086
50005	GJ-23	0.197	0.091	0.078	0.561	0.358	0.285	0.208	0.28	0.211	1.2 †	0.215	0.086
50008	GJ-23	0.223	0.099	0.083	0.576	0.366	0.29	0.226	0.297	0.214	1.15	0.236	0.086
50009	GI-23	0.218	0.099	0.081	0.589	0.355	0.29	0.226	0.299	0.207	1.11	0.23	0.084
50011	ZZ-23	0.228	0.096	0.078	0.57	0.35	0.291	0.22	0.293	0.22	1.17	0.229	0.086
50012	DN-23	0.22	0.093	0.082	0.525	0.327	0.271	0.208	0.276	0.192	1.06	0.218	0.084
50014	BB-31	0.234	0.103	0.084	0.64 †	0.392	0.305	0.236	0.316	0.21	1.15	0.234	0.083
50016	GC-23	0.223	0.098	0.078	0.552	0.35	0.286	0.218	0.29	0.2	1.08	0.232	0.083
50017	DE-23	0.202	0.089	0.075 ††	0.524	0.335	0.27	0.212	0.282	0.216	1.14	0.235	0.082
50020	ZZ-38	0.216	0.091	0.083	0.567	0.358	0.278	0.213	0.29	0.232 †	1.24 †	0.236	0.09
50021	GJ-23	0.187 †	0.093	0.082	0.537								
50024	GJ-23	0.219	0.094	0.081	0.588	0.343	0.273	0.213	0.283	0.211	1.06	0.231	0.088
50025	GJ-23	0.218	0.095	0.084	0.576	3.35 ††	0.279	0.217	0.287	0.205	1.092	0.228	0.085
50027	DN-23	0.217	0.089	0.081	0.555	0.366	0.289	0.226	0.296	0.21	1.11	0.222	0.082
50029	AD-23	0.23	0.1	0.09 ††	0.573	0.367	0.295	0.227	0.307	0.213	1.06	0.233	0.087
50032	DE-11	0.21	0.092	0.082	0.564	0.36	0.284	0.238	0.279	0.21	1.1	0.23	0.09
50037	DE-23	0.22	0.094	0.075 ††	0.581	0.356	0.292	0.224	0.303	0.21	1.08	0.232	0.085
50038	GJ-23	0.427 †	1.15 ††	3.39 ††	0.506 †					0.152 ††	1.41 ††	0.177 ††	0.08

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Manganese (mg Mn/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10069	GH-23	87.7 †	3.36	12.5	62.3 †	134.1 ††	2234 †	90.5 ††	48.1 †	343	239	56.4	6.21
10156	DE-24	81.2	23.5 ††	30.2 ††	63.6 †	155 ††	2815 †	141 ††	63.5 ††	308 ††	258	47.1 ††	7.02
10173	DN-23	74.7	3.71	12.7	56.4	116	1875	149 ††	48.1 †	340	230	55	5.7
11035	GG-23	76	3.7	12	54	110	2000	79	43				
11079	DE-23	72	3.57	12.3	52.8					383	247	64.3 ††	7.02
20204	GJ-23	52.7 †	3.83	14.7 †	54.5	112	1981	74.7 †	266 ††	328	143 ††	30.8 ††	6.6
21043	GJ-23	77.5	0.02 ††	15.8 ††	55	133.3 ††	2070 †	81.4	42.9	351	240	49.9 †	3.22 ††
21100	DE-24	74.7	3.72	12.9	56.7	115	1969	81.9	42.8	328	249	57	6.08
21138	GJ-23	77.8	3.97	13.2	56.1	115	1950	79.9	44	345	236	55.6	6.19
21190	AD-13	68	4.23 †	13.2	54.6	97.3 ††	646 †	70 ††	41.4	262 ††	201 ††	43.0 ††	4.23 ††
21193	GJ-11	72.4	4.55 ††	15.4 ††	44.5 †	107	1875	76	43.9	342	217 †	57.0	4.38 ††
21195	GI-23	74.4	3.33	12.7	54.4								
21196	GJ-23	79.4	3.77	14.3	55.8	129 †	2250 †	85.5 †	47.6 †	223 ††	242	44.9 ††	5.76
21229	GI-23	76.9	4.05	12.9	54.6	109	1920	81.4	43.8	349	226	57.3	6.55
21230	GG-23	73.2	2.19 ††	11.5	52.6	103	1810 †	69.6 ††	41.1	322	200 ††	52.8	5.97
21232	DE-23	76	3.77	13.3	56.2	114	1998	79.3	44.5	352	249	53.8	6.73
21234	GH-09	102 †	3.43	16 ††	73.4 †	67.8 ††	1067 †	43.2 ††	23.4 ††	204 ††	149 ††	27.5 ††	3.07 ††
22	DE-23	72.3	3.6	11.6	50.5	120	2247 †	86.2 †	47.2	358	253	58.3	6.44
50004	DE-23	75.8	3.54	12.1	56.7	124	1989	87.8 †	49.3 ††	351	257	60	6.02
50005	GJ-23	72	3.72	11.6	53.5	113	1970	83.9	44.3	365	238	58.9	6.46
50008	GJ-23	72.8	3.67	12.1	52.1	110	1920	77	41.2	365	241	56.9	6.31
50009	GJ-23	77.6	4.06	12.9	52.2	118	2040	84.4	45.4	377	252	59.9	6.7
50011	ZZ-23	77.5	3.9	12.5	54	115	1900	79	43.5	375	245	60	6.6
50012	DN-23	79.8	3.86	13.2	59.3 †	121	1950	80.1	45.4	352	251	58.7	6.73
50014	DE-23	83.2	5.01 ††	13.6	57.9 †	121	2016	80.3	45.8	349	250	55.3	5.88
50016	GC-23	75.4	3.83	12.1	53.4	120	1990	80.8	44.9	351	262	59	6.32
50017	DE-23	73.1	3.57	12	53.5	116	1946	80.4	44.1	362	262	57.2	6.19
50020	ZZ-38	67.9	3.28	11.8	48.7 †	104	1660 †	65.9 ††	38.5 ††	339	236	47.6 ††	3.66 ††
50021	GJ-23	65.5 †	3.843	12.8	48.4 †								
50024	GJ-23	76.1	3.66	12.5	51.4	116	2047	78.6	44.2	359	254	57.6	6.53
50025	GJ-23	78.7	2.99 ††	10.2 ††	53.5	119	2238 †	80.2	42.4	356	256	58	5 ††
50027	DN-23	76.3	3.79	12.9	53.2	114	1750 †	81.2	43.9	364	235	57.9	6.6
50029	AD-23	80.3	4.22 †	14.1	52.7	109	1964	79.9	44.8	358	216 †	51.8 †	6.61
50032	DE-11	72.9	3.2 †	13.4	51.4	114	1984	65 ††	43.3	356	247	45.2 ††	5.84
50037	DE-23	77	3.72	12.3	53.5	112	1972	78.9	43.1	370	240	58	6.4
50038	GJ-23	13.8 †	68.7 ††	51.1 ††	6.68 †					260 ††	248	43.4 ††	7.09

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Molybdenum (µg Mo/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10069	GH-23	318	114	23	809								
10173	DN-23	308	146	70.5	803	293	131	486	336	50	710	330	270
11079	DE-23	171 †	59 ††	0.001 ††	615								
21100	DE-24	271	167	97.9	730	240	146 †	373 ††	294	47.3	737	301	233
21196	GJ-23	530 †	430 ††	365 ††	1080 †	10 ††	10 †	254 ††	10 ††	360 ††	899 ††	511 ††	356 ††
21229	GI-23	289	153	60.8	833	267	117	480	313	62	699	289	235
21230	GG-24	295	139	75.9	831	273	116	530 †	327	72.9	740	331	257
21232	DE-23	420 †	340 ††	150 ††	1190 †								
22	DE-24	275	128	49.9	780	251	105	474	305	89.7	772	339	300
50004	DE-24	286	164	82.9	761	226	106	471	291	84.6	696	294	232
50005	GJ-23	287	132	60.6	704	207	103	445	270 †	66.9	528 ††	279	250
50009	GJ-24	261	139	48.3	728	238	102	455	310	73.3	727	333	285
50011	ZZ-24	250	140	46	665	220	110	480	312	68	745	315	250
50012	DN-24	164 †	71.4 ††	59.6	773								
50014	DE-23	283	153	66	730	228	124	460	308	145 ††	747	340	280
50020	ZZ-38	192 †	295 ††	72	434 †	700 ††	750 †	1200 ††	750 ††	66.7	367 ††	267	300
50024	GJ-23	621 †	164	353 ††	1020 †	543 ††	438 †	624 ††	560 ††	377 ††	1082 ††	578 ††	340 ††
50027	DN-23	249	132	19.4	727	249	102	450	314	44.2	648	267	231
50029	AD-23	201 †	123	50.8	311 †	175	79.8 †	262 ††	229 ††	77	534 ††	252	242
50037	DE-24	256	138	60.1	692	218	108	468	297	66.4	610 †	262	242

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Nitrate nitrogen (mg NO_3-N/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10069	BA-31	50	10	10	2290	2590	50 †	50	50 ††				
10173	ZZ-38					3354	44	38	10	108 ††	1421	3	21 ††
20204	ZZ-38	857 †	0.95	268 ††	2090	1948	31	508 ††	11.3	0.003	1540	1680 ††	0.9
21043	BB-31									1.85	1432	9.83	4.34
21100	BB-31	1.37	0.51	5.92	1556	2730	27.6	22.7	6.13	4.55	111 ††	3.8	0.465
21195	GI-23	169 †	154 ††	143 ††	1010 †								
21196	BB-27	12.4	21.9 †	23	1630	3180	24.8	45	9.41	10 †	1212	8.58	10 †
21229	BB-31	32.5	9.7	18.1	1760	2492	45.4	42.8	19.1	3.47	1328	7.57	1.35
21232	BB-31	39.3	2.81	2.33	2439	3060	32.8	35.45	9.05	3.5	1375	6.65	5.3 †
22	BA-31	23.1	1.75	0.001	1914	3155	72.8 †	70.5	0.001	0.001	1433	1.43	0.001
50005	BA-30	13.4	0.188	11.2	1970	2850	31.4	22.6	5.66	1.44	1280	2.89	0.801
50011	ZZ-38	21	0.25	11	1956	2738	28	27	14	3	1340	3	1
50012	BB-31	17.3	0.457	4.68	1806					3.15	1330	4.97	0.913
50020	ZZ-38	34.7	14.3 †	15.2	1979	3270	109 †	50.7	23 †	10.1 †	1240	17.2 †	12 †
50029	BB-31	23.5	13.1 †	11.8	1739	2664	27.6	29.2	8.58	12.5 †	1167	11.3	6.11 †
50032	BB-27	89 †	19 †	36 †	2880 †	3708	67 †	85 †	82 ††	38 ††	1871 ††	90 ††	16 ††

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Nitrogen (%N)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10069	GE-31	3.16 †	1.09 ††	0.164 ††	4.66	2.86 ††	1.39 †	2.75 ††	2.48 ††				
10156	CA-37	3.53	1.18	1.86	4.71	3.31	1.74 †	3.64 ††	2.92	2.74	3.54	1.7	1.58
10173	CA-37	3.6	1.23	1.9	4.81	3.26	1.62	3.13	2.83	2.86 ††	3.55	1.61	1.6
10181	CA-37	3.47	1.19	1.89	4.69	3.3	1.57	3.16	2.87	2.74	3.54	1.68	1.61
11079	CA-37	3.67	1.32 ††	1.95	4.93 †	3.36	1.64	3.2	2.96	2.7	3.42	1.67	1.62
20204	CA-37	3.48	1.16	1.84	4.65	3.28	1.58	3.18	2.86	2.69	3.42	1.57	1.52
21043	CA-37	3.49	1.16	1.79	4.75	3.25	1.56	3.07	2.84	2.76	3.56	1.71	1.53
21100	DE-24	3.45	1.2	1.88	4.63	3.02	1.49	2.89	2.61	2.7	3.47	1.62	1.55
21138	CA-37	3.74	1.3 ††	2.08 ††	4.84	3.12	1.5	2.92	2.71	2.71	3.46	1.57	1.38 ††
21190	GE-38	3.19 †	1.20	1.93	3.63 †	3.07	1.41 †	2.96	2.71	2.49 ††	3.10 ††	1.69	1.65
21193	GE-32	3.37	1.09 ††	1.86	4.63	2.9 ††	1.36 †	2.79 †	2.59	2.74	3.45	1.68	1.58
21195	GI-23	2.62 †	1.21	1.8	3.67 †								
21196	CA-37	3.6	1.25	1.99	4.67	3.54 ††	2 †	3.54 ††	3.41 ††	2.45 ††	3.23 ††	2.87 ††	1.49
21229	GE-31	3.49	1.24	1.83	4.68	3.11	1.61	3.1	2.85	2.52 ††	3.3	1.54	1.48
21230	CA-37	3.46	1.13	1.8	4.61	3.24	1.55	3.08	2.85	2.69	3.5	1.61	1.56
21232	CA-37	3.38	1.25	1.93	4.45 †	3.19	1.55	3.01	2.61	2.68	3.42	1.56	1.47
21234	GE-32	3.75 †	1.3 ††	1.94	4.89	2.77 ††	1.42 †	2.75 ††	2.54	2.4 ††	3.04 ††	1.47 ††	1.4 ††
22	CA-37	3.33	1.12	1.77	4.6	3.24	1.55	3.1	2.87	2.66	3.52	1.66	1.59
50004	CA-37	3.42	1.18	1.83	4.42 †	3.42	1.78 †	3.3 †	2.97	2.76	3.58	1.71	1.55
50005	CA-37	3.34	1.15	1.83	4.61	3.08	1.52	2.92	2.68	2.65	3.47	1.63	1.51
50008	CA-37	3.39	1.15	1.78	4.66	3.23	1.47	3.01	2.76	2.72	3.53	1.58	1.56
50009	CA-37	3.57	1.21	1.94	4.74	3.28	1.55	3.14	2.92	2.73	3.5	1.7	1.5
50011	CA-37	3.55	1.18	1.82	4.7	3.2	1.57	3.11	2.82	2.69	3.43	1.62	1.54
50012	CA-37	3.53	1.2	1.9	4.9 †	3.08	1.49	2.97	2.72	2.75	3.45	1.66	1.59
50014	DE-23	3.51	1.19	1.84	4.71	3.22	1.57	3.07	2.82	2.68	3.49	1.66	1.53
50016	GE-31	3.35	1.18	1.83	4.61	3.05	1.52	3.04	2.81	2.69	3.39	1.56	1.55
50017	CA-37	3.47	1.21	1.82	4.72	3.14	1.52	2.97	2.71	2.74	3.53	1.61	1.53
50020	ZZ-38	3.41	1.14	1.85	4.55	3.15	1.57	3.05	2.72	2.62	3.35	1.64	1.5
50021	CA-37	3.45	1.14	1.83	4.60	3.18	1.47	3.02	2.75				
50024	CA-37	3.62	1.21	1.9	4.7	3.28	1.54	3.14	2.83	2.72	3.51	1.72	1.57
50027	CA-37	3.46	1.2	1.86	4.6	3.18	1.66 †	3.11	2.77	2.68	3.42	1.66	1.52
50029	CA-37	3.6	1.17	1.88	4.85	3.23	1.47	3.05	2.77	2.74	3.49	1.55	1.5
50032	CA-37	3.48	1.23	1.92	4.55	3.12	1.51	2.98	2.68	2.6	3.41	1.6	1.5
50037	CA-37	3.56	1.18	1.87	4.7	3.14	1.56	2.98	2.73	2.66	3.36	1.713	1.54
50038	CA-37	3.58	1.18	1.89	4.74								

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Phosphorus (%P)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10069	GH-23	0.346 †	0.244 ††	0.148 †	0.514	0.3 ††	0.131	0.275 †	0.14	0.124	0.208	0.19	0.247
10156	DE-24	0.235 †	0.244 ††	0.139 ††	0.405 †	0.37 ††	0.163 †	0.343 ††	0.188 ††	0.125	0.207	0.164 ††	0.223 ††
10173	DN-23	0.298	0.298	0.17	0.485	0.253	0.129	0.243 †	0.131	0.14	0.2	0.19	0.26
10181	GF-31	0.291	0.311	0.167	0.473	0.258	0.114	0.247	0.129	0.127	0.209	0.181	0.26
11035	GG-23	0.29	0.28	0.16	0.46	0.25	0.11	0.22 ††	0.12				
11079	DE-23	0.286	0.285	0.164	0.47					0.132	0.212	0.214 ††	0.27
20204	GJ-23	0.265 †	0.286	0.148 †	0.473	0.26	0.119	0.261	0.129	0.134	0.222	0.187	0.26
21043	GJ-23	0.288	0.299	0.167	0.512	0.266	0.113	0.258	0.129	0.128	0.212	0.187	0.244 †
21100	DE-24	0.284	0.29	0.164	0.462	0.261	0.124	0.256	0.127	0.13	0.203	0.184	0.264
21138	GJ-23	0.287	0.292	0.163	0.513	0.26	0.13	0.255	0.14	0.123	0.199	0.186	0.244 †
21190	GE-30	0.256 †	0.262 †	0.149 †	0.413	0.252	0.107	0.245 †	0.126	0.155 ††	0.205	0.195	0.301 ††
21193	GJ-30	0.29	0.28	0.18 †	0.54 †	0.25	0.12	0.25	0.13	0.122	0.205	0.181	0.26
21195	GI-23	0.295	0.294	0.173	0.465								
21196	GJ-23	0.312 †	0.32 ††	0.179 †	0.495	0.302 ††	0.146 †	0.284 ††	0.146 ††	0.069 ††	0.181 ††	0.137 ††	0.229 ††
21229	GI-23	0.312 †	0.305	0.173	0.534 †	0.26	0.12	0.261	0.134	0.126	0.204	0.194	0.249
21230	GG-23	0.286	0.291	0.167	0.486	0.231 ††	0.112	0.214 ††	0.115 ††	0.115	0.179 ††	0.183	0.251
21232	DE-23	0.281	0.287	0.167	0.496	0.26	0.12	0.26	0.13	0.12	0.21	0.18	0.27
21234	GH-30	0.25 †	0.3	0.3 ††	0.35 †								
22	DE-23	0.276	0.282	0.155	0.449	0.268	0.115	0.266	0.135	0.129	0.21	0.201	0.282 †
50004	DE-23	0.291	0.291	0.162	0.46	0.271	0.128	0.265	0.137	0.128	0.196	0.191	0.248
50005	GJ-23	0.28	0.286	0.16	0.463	0.262	0.121	0.26	0.127	0.132	0.222	0.192	0.261
50008	GJ-23	0.281	0.287	0.162	0.466	0.261	0.114	0.258	0.129	0.124	0.206	0.186	0.26
50009	GJ-23	0.294	0.31	0.168	0.446	0.263	0.12	0.263	0.134	0.127	0.201	0.189	0.264
50011	ZZ-23	0.293	0.297	0.158	0.466	0.25	0.119	0.255	0.13	0.132	0.206	0.193	0.265
50012	DN-23	0.297	0.303	0.163	0.481	0.243	0.109	0.238 †	0.125	0.129	0.197	0.184	0.252
50014	GE-31	0.322 †	0.336 ††	0.178 †	0.506	0.282 †	0.129	0.269	0.139	0.128	0.215	0.197	0.264
50016	GC-23	0.296	0.292	0.161	0.472	0.258	0.115	0.252	0.13	0.127	0.211	0.196	0.264
50017	DE-23	0.266 †	0.271	0.147 ††	0.447	0.256	0.114	0.236 ††	0.125	0.116	0.192	0.177	0.233 ††
50020	ZZ-38	0.268 †	0.266 †	0.159	0.445	0.227 ††	0.105	0.212 ††	0.111 ††	0.13	0.214	0.191	0.257
50021	GJ-23	0.245 †	0.285	0.165	0.422								
50024	GJ-23	0.283	0.273	0.16	0.453	0.263	0.109	0.246	0.128	0.127	0.222	0.195	0.254
50025	GJ-23	0.35 †	0.414 ††	0.207 ††	0.7 †	0.271	0.127	0.263	0.137	0.122	0.214	0.19	0.26
50027	DN-23	0.294	0.276	0.165	0.487	0.269	0.12	0.26	0.129	0.131	0.208	0.184	0.247
50029	AD-23	0.293	0.295	0.193 ††	0.377 †	0.267	0.132	0.262	0.15 ††	0.143 ††	0.213	0.218 ††	0.268
50032	DE-30	0.285	0.296	0.171	0.459	0.275	0.133	0.258	0.144 ††	0.133	0.213	0.193	0.263
50037	DE-23	0.29	0.286	0.161	0.467	0.257	0.12	0.26	0.13	0.133	0.203	0.198	0.26
50038	GJ-23	0.15 †	0.259 ††	0.493 ††	0.277 †					0.091 ††	0.221	0.146 ††	0.23 ††

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Potassium (%K)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10069	GH-23	2.37	0.364	1.57	6.81	3.711	0.987	2.43	0.428	0.757	4.87	1.64	0.433
10156	DE-24	2.22 †	0.355	1.46	6.14	5.12 ††	1.35 †	3 ††	0.579 ††	0.687 ††	4.4	1.25 ††	0.528 ††
10173	DN-23	2.58	0.389	1.66	7.02	3.8	1.06	2.28	0.452	0.78	4.84	1.56	0.39 ††
10181	GF-38	2.54	0.4	1.63	6.61	3.3	0.875	2.07	0.404	0.692 ††	4.25	1.41	0.388 ††
11035	GG-23		0.36			3.7	0.94	2.1	0.37				
11079	DE-23									0.444 ††	4.35	1.4	0.388 ††
20204	GJ-23	2.23 †	0.386	1.73 †	6.55	3.06 ††	1.02	1.63 ††	0.641 ††	0.802	4.21	1.01 ††	0.453
21043	GJ-23					3.25	0.943	2.2	0.399	0.76	4.23	1.26 ††	0.392 ††
21100	DE-24	2.42	0.384	1.59	6.39	3.57	0.973	2.23	0.377	0.792	4.57	1.58	0.451
21138	GJ-23	2.5	0.389	1.6	6.28	3.87	0.982	2.22	0.391	0.742	4.37	1.48	0.412
21190	GE-09	1.47 †	0.398	1.05 ††	0.04 †	2.26 ††	0.933	1.24 ††	0.415	0.735	2.378 ††	0.425 ††	0.431
21193	GJ-11	2.62	0.39	1.78 ††	6.7	3.53	1.06	2.27	0.4	0.788	0.594 ††	1.65	0.435
21196	GJ-23	2.2 †	0.496 ††	1.53	5.79 †	3.4	1.1	2.11	0.478	0.515 ††	3.72 ††	1.15 ††	0.471
21229	GI-23	2.59	0.403	1.67	6.85	3.68	1.02	2.33	0.412	0.787	4.72	1.64	0.443
21230	GG-23	2.38	0.356	1.49	6.74	3.05 ††	0.888	1.9 ††	0.36	0.707 †	3.77 †	1.48	0.433
21232	DE-23	1.95 †	0.304 ††	1.27 ††	6.44	3.56	0.95	2.55 ††	0.49 ††	0.71 †	4.47	1.43	0.43
21234	GH-20	2.42	0.53 ††	1.67	4.67 †	2.2 ††	0.93	1.5 ††	0.5 ††	0.8	3.17 ††	1.39	0.53 ††
22	DE-23	2.47	0.375	1.57	6.76	4.01	1.05	2.49	0.433	0.802	5.04	1.68	0.473 †
50004	DE-23	2.45	0.377	1.56	7.18	3.59	0.976	2.21	0.406	0.81	4.93	1.6	0.429
50005	GJ-23	2.24 †	0.368	1.45	6.44	3.53	1	2.14	0.49 ††	0.788	4.76	1.46	0.439
50008	GJ-23	2.5	0.383	1.61	6.51	3.86	0.969	2.31	0.401	0.783	4.69	1.64	0.456
50009	GI-23	2.49	0.381	1.61	6.86	3.99	1.06	2.42	0.429	0.791	4.91	1.58	0.426
50011	ZZ-23	2.5	0.39	1.53	6.48	3.65	0.99	2.2	0.38	0.805	4.68	1.55	0.447
50012	DN-23	2.37	0.384	1.46	6.69	3.62	0.851	1.94 †	0.399	0.722	4.87	1.41	0.409
50014	DE-23	2.67	0.43 ††	1.69	7.5 †	4.13	1.08	2.47	0.434	0.775	4.98	1.63	0.439
50016	GC-23	2.54	0.381	1.56	6.86	3.63	1.02	2.24	0.404	0.795	4.66	1.65	0.447
50017	DE-23	2.5	0.379	1.57	7.16	3.95	1.06	2.56 ††	0.449	0.885 ††	5.4	1.81 †	0.463
50020	ZZ-38	2.52	0.368	1.65	6.73	3.77	0.914	2.18	0.369	0.791	4.97	1.66	0.448
50021	GJ-23	2.04 †	0.37	1.35 ††	5.68 †								
50024	GJ-23	2.39	0.351	1.52	6.69	3.64	0.945	2.13	0.389	0.757	4.73	1.52	0.419
50025	GJ-23	2.49	0.382	1.59	6.52	3.48	1.02	2.14	0.413	0.754	3.76 †	1.61	0.434
50027	DN-23	2.43	0.361	1.57	6.49	3.69	0.994	2.19	0.397	0.783	4.67	1.53	0.427
50029	AD-23	2.39	0.283 ††	1.53	6.61	3.92	0.887	2.3	0.43	0.733	4.80	1.6	0.362 ††
50032	DE-11	2.57	0.371	1.71	7.09	3.73	1	2.3	0.43	0.777	4.82	1.58	0.437
50037	DE-23	2.48	0.382	1.51	6.59	3.87	1.02	2.23	0.48	0.8	5.33	1.6	0.436
50038	GJ-23	8.77 †	18.4 ††	44.7 ††	2.19 †					0.608 ††	5.38	1.34 †	0.437

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Selenium (mg Se/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10069	GH-22	65	15	20	25								
10173	DN-23	83.1	26	43.7	4.97	21.2	28	8.2	32.7	40	100	40	10
21100	DE-24	182 †	5.43 †	49.3	201 †	10	117 †	56.8	8.93	180 ††	2320 ††	419 ††	99.5 ††
21196	GJ-23	1 †	106 ††	41.2	1	10	1530 †	10	202 ††	1 ††	1	1 †	1 ††
21229	GI-23	97.6	21.3	47	76.2	143	36	40.5	41.1	45.8	208	40.3	10.7
21230	GG-24	125	27.9	61.3	90.1	334	136 †	146 ††	231 ††	72.2 ††	119	48.2	47.9 ††
21232	DE-23	1330 †	1350 ††	920 ††	1770 †								
22	DE-24	82	18.4	31.4	29.1	91.5	51.9 †	15.8	49.4	36.7	160	57	15.5
50004	DE-24	60.8	22	32.3	2.07	126	25.5	45.2	62.2	24.3 †	95.9	28.1	16.2
50005	GJ-23	33	17.8	79.7 ††	43.4	4.28	35	13.9	3.16	34.9	35.8	12.3	12.7
50009	GJ-24	92.9	20.9	42.6	38.7	170	43	58.6	66.4	35.2	138	42.9	10.6
50011	ZZ-24	108	21	33	53	460 ††	35	25	103	40	580 ††	100 ††	12
50012	DN-24	63.8	11.2 †	39.9	36.3								
50014	DE-23					82	32	26	41	39.2	147	47.7	14.3
50024	GJ-23	5 †	178 ††	5 ††	5	5	5 †	5	5	50	5	5 †	159 ††
50037	DE-24	82.6	19.3	25.51	47.1	818 ††	33	16.8	50.1	33.2	751 ††	43.5	12

Lab. Code #	Method Codes	Plant sample identification and values for NOT ASSESSABLE 2013-14: Silicon (%Si) NOT ASSESSABLE											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
21100	DE-24	0.048	0.013 †	0.032	0.047	0.027	0.066 †	0.03	0.034	0.037	0.05	0.063	0.018
21196	ZZ-23	0.116 †	0.046 ††	0.044	0.141 †	1.27 ††	2.01	1.71	0.503 ††	0.008	0.077	0.214	0.004
21232	DE-23	0.037	0.002	0.013	0.04								
50004	DE-23	0.046	0.003	0.013	0.046	0.058	0.112 †	0.124	0.069	0.019	0.086	0.068	0.012
50005	DE-23	0.039	44.2 ††	0.014	0.049	0.044	1.69	0.143	0.054	0.041	0.043	0.100	0.012
50008	ZZ-23	0.173 †	0.004	0.027	0.529 †	0.434 ††	1.86	2.54	0.427 ††	0.039	0.389 ††	1.13 ††	0.02
50037	DB-31	0.084	0.005	0.007	0.051	0.058	1.81	2.52	0.064	0.046	1.23 ††	0.035	0.012

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Sodium (%Na)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10069	GH-23	0.115	0.003	0.054	0.276 †	0.746	0.011	0.048 †	1.44	0.088 †	2.34	0.729	0.008
10156	DE-24	0.129 †	0.004 ††	0.064 ††	0.276 †	1.12 ††	0.01	0.059 ††	2.17 ††	0.077 ††	2.03	0.499 ††	0.012 ††
10173	DN-23	0.109	0.0002	0.049	0.208	0.68	0.035 †	0.04	1.3	0.09	2.16	0.66	0.01
11035	GG-23	0.11		0.05	0.1 †	0.75	0.01	0.04	1.3				
11079	DE-23	0.107	0.001	0.05	0.192 †					0.109 ††	2.10	0.719	0.016 ††
20204	GJ-23	0.094 †	0.002	0.042 ††	0.22	0.697	0.009	0.043	1.33	0.096	2.36	0.698	0.007
21043	GJ-23	0.113	0.001	0.053	0.24 †	0.774	0.008	0.04	1.41	0.099	2.38	0.668	0.007
21100	DE-24	0.114	0.0004	0.054	0.217	0.685	0.008	0.039	1.3	0.096	2.46	0.688	0.01
21138	GJ-23	0.118	0.005 ††	0.055	0.255 †	0.764	0.012 †	0.046 †	1.4	0.097	2.23	0.646	0.007
21190	AD-09	0.142 †	0.002	0.067 ††	0.301 †	0.772	0.017 †	0.055 ††	1.17 †	0.117 ††	1.52 ††	0.579 ††	0.014 ††
21193	GJ-11	0.114	0.004 ††	0.057	0.209	0.69	0.01	0.04	1.48	0.096	2.23	0.857 ††	0.004 ††
21195	GI-23	0.113	0.002	0.055	0.23								
21196	GJ-23	0.103	0.001	0.046	0.197	0.714	0.006 †	0.039	1.31	0.048 ††	1.91 ††	0.433 ††	0.005 †
21229	GI-23	0.124	0.0003	0.055	0.231	0.688	0.009	0.041	1.31	0.095	2.22	0.689	0.008
21230	GG-23	0.108	0.0005	0.049	0.196	0.638	0.009	0.04	1.34	0.095	2.13	0.647	0.007
21232	DE-23	0.1	0.001	0.049	0.215	0.77	0.01	0.05 ††	1.39	0.089 †	2.34	0.59 †	0.008
22	DE-23	0.113	0.0002	0.050	0.214	0.807	0.01	0.045	1.59 ††	0.097	2.48	0.73	0.009
50004	DE-23	0.113	0.001	0.049	0.21	0.763	0.01	0.043	1.44	0.094	2.32	0.676	0.002 ††
50005	GJ-23	0.131 †	0.001	0.058	0.216	0.835	0.009	0.051 ††	1.39	0.099	2.5	0.722	0.007
50008	GJ-23	0.119	0.003	0.053	0.221	0.74	0.01	0.043	1.39	0.106 ††	2.35	0.72	0.011 †
50009	GI-23	0.122	0.0003	0.056	0.229	0.797	0.011	0.046 †	1.49	0.103	2.47	0.73	0.007
50011	DE-23	0.121	0.001	0.052	0.218	0.709	0.009	0.042	1.37				
50012	DN-23	0.113	0.0003	0.052	0.212	0.677	0.008	0.038	1.4	0.096	2.24	0.676	0.007
50014	DE-23	0.126	0.002	0.054	0.24 †	0.819	0.008	0.046 †	1.23	0.099	2.73 †	0.739	0.007
50016	GC-23	0.121	0.001	0.051	0.21	0.674	0.009	0.04	1.28	0.091	2.4	0.663	0.008
50017	DE-23	0.107	0.0002	0.045	0.212	0.701	0.008	0.042	1.21	0.108 ††	2.46	0.701	0.009
50020	ZZ-38	0.111	0.002	0.051	0.213	0.704	0.009	0.04	1.36	0.107 ††	2.4	0.704	0.011 †
50021	GJ-23	0.094 †	0.001	0.048	0.198								
50024	GJ-23	0.117	0.0001	0.052	0.229	0.742	0.008	0.04	1.41	0.095	2.32	0.697	0.006
50025	GJ-23	0.109	0.002	0.05	0.209	0.74	0.013 †	0.043	1.26	0.079 ††	2.44	0.709	0.001 ††
50027	DN-23	0.112	0.0004	0.051	0.222	0.703	0.01	0.04	1.3	0.097	2.23	0.669	0.008
50029	AD-23	0.11	0.001	0.05	0.197	0.71	0.02 †	0.045	1.52 †	0.103	1.77 ††	0.668	0.01
50032	DE-11	0.129 †	0.005 ††	0.06 †	0.242 †	0.748	0.009	0.047 †	1.34	0.098	2.34	0.709	0.022 ††
50037	DE-23	0.11	0.001	0.050	0.222	0.761	0.009	0.04	1.34	0.099	0.68 ††	2.4 ††	0.007
50038	GJ-23	0.319 †	0.427 ††	0.315 ††	0.052 †					0.078 ††	2.47	0.567 ††	0.008

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Sulfur (%S)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	ASP 102	ASP 103	ASP 104	ASP 21	ASP 22	ASP 23	ASP 24	ASP 51	ASP 52	ASP 53	ASP 54
10069	GH-23	0.221 †	0.085	0.138	0.415 †	0.64	0.123 †	0.237 ††	0.227	0.195 ††	0.558	0.188	0.112
10156	DE-24	0.225 †	0.157 ††	0.222 ††	0.437 †	0.72 ††	0.104	0.216	0.3 ††	0.177	0.569	0.161	0.125
10173	DN-23	0.193	0.09	0.137	0.38	0.595	0.113 †	0.211	0.205	0.17	0.55	0.19	0.11
11035	GG-23	0.16 †		0.11 ††	0.31 †	0.59		0.17 ††	0.18				
11079	DE-23	0.183	0.085	0.131	0.361					0.15	0.476 †	0.174	0.104
20204	GJ-23	0.168	0.082	0.113 ††	0.345	0.572	0.103	0.212	0.195	0.17	0.522	0.175	0.117
21043	GJ-23	0.184	0.02 ††	0.135	0.396	0.617	0.102	0.21	0.209	0.166	0.54	0.169	0.1
21100	DE-24	0.196	0.096	0.138	0.352	0.532	0.128 †	0.222	0.209	0.182	0.474 ††	0.192	0.128 ††
21138	GJ-23	0.182	0.085	0.131	0.376	0.592	0.106	0.201	0.194				
21196	GJ-23	0.189	0.09	0.142	0.367	0.662	0.121 †	0.229	0.222	0.099 ††	0.484	0.155 †	0.101
21229	GI-23	0.199	0.092	0.141	0.381	0.544	0.104	0.212	0.206	0.171	0.542	0.189	0.113
21230	GG-23	0.175	0.079	0.127	0.361	0.504	0.104	0.186 ††	0.191	0.155	0.438 ††	0.172	0.108
21232	DE-23	0.175	0.082	0.129	0.36	0.56	0.1	0.21	0.2	0.16	0.53	0.17	0.11
22	DE-23	0.181	0.084	0.127	0.351	0.62	0.108	0.225	0.218	0.182	0.581	0.203	0.131 ††
50004	DE-23	0.178	0.075	0.131	0.34	0.638	0.132 †	0.223	0.227	0.193 ††	0.585	0.187	0.101
50005	GJ-23	0.174	0.084	0.13	0.358	0.616	0.102	0.201	0.191	0.171	0.559	0.189	0.114
50008	GJ-23	0.189	0.089	0.137	0.373	0.614	0.106	0.217	0.212	0.179	0.566	0.189	0.12
50009	GI-23	0.186	0.089	0.132	0.347	0.58	0.106	0.213	0.21	0.174	0.54	0.185	0.115
50011	ZZ-23	0.186	0.085	0.13	0.346	0.52	0.1	0.192	0.182	0.17	0.496	0.17	0.112
50012	DN-23	0.188	0.088	0.132	0.359	0.573	0.101	0.206	0.206	0.171	0.539	0.186	0.116
50014	DE-23	0.205 †	0.1 ††	0.144	0.387	0.611	0.108	0.216	0.214	0.168	0.527	0.178	0.11
50016	GC-23	0.183	0.085	0.122	0.337	0.565	0.103	0.206	0.2	0.166	0.534	0.184	0.114
50017	DE-23	0.17	0.079	0.118	0.333	0.559	0.105	0.206	0.205	0.163	0.502	0.17	0.105
50020	ZZ-38	0.184	0.085	0.137	0.361	0.619	0.1	0.194	0.191	0.176	0.58	0.186	0.117
50021	GJ-23	0.192	0.108 ††	0.166 ††	0.382								
50024	GJ-23	0.177	0.072 †	0.127	0.339	0.579	0.111 †	0.197	0.205	0.164	0.546	0.178	0.107
50025	GJ-23	0.184	0.084	0.136	0.378	0.605	0.1	0.21	0.205	0.164	0.592	0.187	0.111
50027	DN-23	0.181	0.081	0.129	0.337	0.578	0.103	0.209	0.2	0.176	0.529	0.174	0.11
50029	CA-37	0.187	0.091	0.139	0.35	0.525	0.101	0.203	0.189	0.198 ††	0.496	0.176	0.121
50032	DE-30	0.136 †	0.071 †	0.102 ††	0.291 †	0.647	0.128 †	0.183 ††	0.195	0.16	0.543	0.203	0.135 ††
50037	DE-23	0.189	0.086	0.131	0.349	0.59	0.102	0.203	0.194	0.171	0.575	0.181	0.113
50038	GJ-23	0.255 †	0.313 ††	0.491 ††	0.209 †					0.005 ††	0.536	0.136 ††	0.116

Lab. Code #	Method Codes	Plant sample identification and values for 2013-14: Zinc (mg Zn/kg)											
		October 2013 (Round 113)				*February 2014 (Round 313)*				*May 2014 (Round 513)*			
		ASP 101	**ASP 102**	**ASP 103**	**ASP 104**	**ASP 21**	**ASP 22**	**ASP 23**	**ASP 24**	**ASP 51**	**ASP 52**	**ASP 53**	**ASP 54**
10069	GH-23	36.3 †	17.2 ††	16.7	103	45.5	13.5 †	32.5 †	29.8	19.7	49	16.9	24.9
10156	DE-24	31.4	24.7 ††	20.4 ††	79.2 †	51.3 ††	14.9 †	31.3	32.3 †	15.2 ††	47.9	11 ††	20.7 ††
10173	DN-23	28.3	22.5	16.1	93.7	36.4	12.9	26.5	26.3	20	50	16	25
11035	GG-23	30	22	18	87	43	14 †	29	29				
11079	DE-23	28.9	19.1	17.1	93.5					19	54.4	17	24.5
20204	GJ-23	26.7	20.8	16.6	88.7	35.7	12	31.2	27.6	21	45.8	15.4	23.8
21043	GJ-23	27.9	20	17	99	36.5	10.2 †	24.9	24.7	19	46.3	13.6 †	22.8
21100	DE-24	28.2	19.5	17.1	99.7	39.6	11.2	25.2	26.4	20	52.2	15.2	23.2
21138	GJ-23	29.6	21.4	17.9	99.3	40	12.1	27.3	27.2	19.4	48.3	15.7	23.2
21190	AD-13	30.7	26.4 ††	18.8	97.3	43.1	19.8 †	31.7	33.2 ††				
21193	GJ-11	33.4	22.3	19.1	49 †	37.8	12	25.9	27.2	18.7	47.6	15.5	21.4
21195	GI-23	32.1	21.6	19.4	99.6								
21196	GJ-23	31.1	20.9	19	102	46.9	14.8 †	31.6	30.6	15.8 ††	52.1	12.1 ††	21.7
21229	GI-23	31.1	21.6	18.4	97.7	37.1	11.4	27.1	27.1	19.9	47.6	16	24.3
21230	GG-23	27.6	18.9	16.7	88.7	33.8	10.7	24.5	23.8	16.7 ††	39.9 ††	13.9	20.9 †
21232	DE-23	28.9	20	18	98.5	35.7	8.34 †	24.1	24.9	21.2	50.4	15.5	23.5
21234	GH-09	29.7	18.9	18.7	97.6	21.4 ††	5.71 †	14.1 ††	12.7 ††	12.4 ††	28.4 ††	9.69 ††	13.1 ††
22	DE-23	29.5	21.1	17.5	91.9	45.8	11.8	29.1	29.3	21	52.4	17	26.4 ††
50004	DE-23	29.3	20.5	17.5	90.4	41.8	12.9	32.5 †	29.8	19.2	52.5	15.9	22.5
50005	GJ-23	32.9	21	24.3 ††	92.2	42.4	12	34.4 ††	30.9	20.9	54	33.9 ††	24.5
50008	GJ-23	28.3	21.2	17.8	91.2	36.5	11.2	27	25	20.2	49.5	15.5	24.2
50009	GI-23	30	21	17.8	90.1	39.4	11.8	28.5	27.7	19.5	50.2	15.4	22.9
50011	ZZ-23	31.3	21.6	18.5	93.4	38	11.6	27.6	26	21	51.1	15.5	24
50012	DN-23	29.8	20.7	17.8	97.5	39.2	11.5	27	26.9	22.1 †	48.5	16.4	23.7
50014	DE-23	32	21.8	18.5	99.2	42	12.3	28.2	28.7	20.4	53.3	16	22.9
50016	GC-23	30.2	20.4	17.2	93.8	39.9	11.9	27.9	27.8	20.4	53.7	16.4	23.4
50017	DE-23	29	18.9	15.9	91.7	36	10.8	25.8	25.3	21.3	50.8	15.9	22
50020	ZZ-38	28.2	19.8	18.3	90	39.2	13.1	26.2	26.2	19.6	52.3	17.4 †	24
50021	GJ-23	25 †	21.6	16.7	84.4								
50024	GJ-23	30.2	21.1	18.1	89.1	36.9	10.2 †	24.8	24.7	19.4	48.8	14.9	23.1
50025	GJ-23	28	20.8	17.6	86.5	38	11.7	28.4	27.6	19.4	48	15	24
50027	DN-23	29.6	19.8	17.4	98.5	40.8	11.4	27	26.3	19.9	50.2	14.9	23.9
50029	AD-23	31.1	22.5	19.7	90.4	39.7	11.1	28.4	28.1	21	48.5	12.7 ††	25.5
50032	DE-11	28.9	19.1	17.7	90	36.9	10.8	26.4	25	19.3	51.2	14.6	22.4
50037	DE-23	28.6	20.8	16.8	93.4	38.6	11.9	28.5	26.7	20.5	50.2	16.5	24.1
50038	GJ-23	18.8 †	30.2 ††	103 ††	22.3 †					15.7 ††	52.3	10.5 ††	20.8 †