



**Compositional Analysis of Forage and Grain from Event 5307 Hybrid Maize
Grown During 2008 in the USA**

Amended Report No. 2

Data Requirement Not applicable

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Volume 2 of 2

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**Appendix B: Compositional Analysis of 5307-08-101 Maize
Forage and Grain. Covance Study No. 8200-888**



Final Report

Study Title	Compositional Analyses of 5307-08-101 Maize Forage and Grain
Testing Guidelines	Not Applicable
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Testing Facility	Covance Laboratories Inc. 3301 Kinsman Boulevard Madison, WI 53704
Covance Study Identification	Covance 8200-888
Covance Client Identification	1001164
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Covance 8200-888
Syngenta 5307-08-101

COMPLIANCE STATEMENT

Compositional Analyses of 5307-08-101 Maize Forage and Grain

This study was conducted in accordance with the following:

- Environmental Protection Agency (EPA) Good Laboratory Practice Standards, 40 CFR 160

with the following exceptions:

1. Reference standards (if applicable) were not listed in the protocol or characterized according to GLP standards.
2. This study was intended for characterization of the test substances. Therefore, many GLP standards did not apply as stated in section 160.135 (b) of the regulations.
3. Stability of the compositional analytes in the test substance was not determined.

These exceptions had no effect on the integrity or quality of the study.

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QUALITY ASSURANCE STATEMENT

This report has been reviewed by the Quality Assurance Unit of Covance Laboratories Inc. and accurately reflects the raw data. The following study specific inspections were conducted and findings reported to the study director (SD) and associated management.

Inspection Dates		Phase	Date Reported to SD and SD Management
From	To		
10 Dec 2008	10 Dec 2008	Protocol Review	10 Dec 2008
05 May 2009	06 May 2009	Analytical Chemistry	06 May 2009
22 Jun 2009	26 Jun 2009	Draft Report and Data Review	26 Jun 2009
15 Jul 2009	16 Jul 2009	Data/Table Review	17 Jul 2009
14 Aug 2009	17 Aug 2009	Revised Draft Report Review	17 Aug 2009
11 Sep 2009	11 Sep 2009	Revised Draft Report Review	11 Sep 2009


 Representative
 Quality Assurance Unit

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 Date

Covance 8200-888
Syngenta 5307-08-101

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STUDY IDENTIFICATION

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5307-08-101

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Study Timetable:
Study Initiation Date: 10 December, 2008
Study Completion Date: 16 September, 2009

INTRODUCTION

The purpose of this study was to conduct compositional analyses of maize forage and grain samples from study 5307-08-101.

TESTING GUIDELINES

Testing guidelines were not applicable to this study.

MAJOR COMPUTER SYSTEMS

The major computer systems used on this study may have included, but were not limited to, the following systems:

- Balance (balance weight capture system)
- PCCalc (result calculation system)
- Waters Empower Chromatography Manager (data acquisition and result calculation system)
- MADCAP (dilution calculation system)
- WINGZ (calculation of standard curve)
- ICP WinLab32 (ICP spectrometry)
- Laboratory Information Management System (sample and assay tracking)
- The Metasys or REES (monitor and document facility storage conditions)
- UV-Visible ChemStation (data acquisition)
- Elan (ICP-MS)
- eNotes (official study communication system)

TEST, CONTROL, AND REFERENCE SUBSTANCES

Test Substances

The test substances were 5307-08-101 maize forage and grain samples. Each sample was identified with a unique identifier.

Control Substances

There were no control substances for this study.

Reference Substances

There were no reference substances for this study.

Appropriate reference standards were used in each assay for the analytical procedures and equipment calibrations. See Appendix A for reference standard identification (if applicable).

Storage Conditions

Upon receipt, the test samples were stored in a freezer set to maintain $-20 \pm 10^{\circ}\text{C}$. Reference standards were stored according to vendor specifications.

Characterization, Purity, and Stability

The purpose of this study was to determine the composition of maize forage and grain. The sponsor has deemed that the test substances, when stored in a freezer set to maintain $-20 \pm 10^{\circ}\text{C}$, were stable for the duration of the experimental phase of this study. Certificates of analysis of the reference standards, when applicable, will be archived at Covance. When applicable, reference standard stability (e.g., expiration, shelf life, retest date, re-certification date, or equivalent) was documented in the raw data.

Disposition

Any remaining prepared dilutions or extractions of the test substances (if applicable) were discarded at Covance. Any remaining test substances will be archived at Covance for one year or until the final disposition is directed by the sponsor. Any remaining reference standards may be used for other testing.

SAFETY

Safety precautions were taken as outlined in the Environmental, Health, and Safety section of the Covance Policies and Procedures Manual.

RESERVE (ARCHIVE) SAMPLES

Reserve samples were not required for this study per Section 160.135 (b) of the GLP regulations.

SAMPLE RECEIPT AND HANDLING

The samples were received at Covance in a frozen state on dry ice. The samples were entered into the Covance Laboratory Information Management System (LIMS) with unique LIMS numbers. Each Syngenta sample identification was matched with the Covance LIMS information.

CONTROL OF BIAS

The samples were analyzed in a non-systematic, random order to minimize assay bias. Covance Laboratories determined the random analysis order.

STATISTICAL EVALUATIONS

There were no statistical evaluations performed on the final tabulated results by Covance.

EXPERIMENTAL DESIGN

This study used approved analytical methods to determine the composition of the samples. See Appendix A for a summary of the analytical methods referenced by the method mnemonic.

The following analyses were performed on the forage samples:

Analyte	Method Mnemonic¹
Acid Detergent Fiber	ADF
Neutral Detergent fiber	NDFE
Minerals: Calcium, Phosphorus	ICPS
Proximates:	
Ash	ASHM
Fat	FAAH
Moisture	M100
Protein	PGEN
Carbohydrate	CHO

¹Analytical methods are kept on file at Covance Laboratories Inc.

The following analyses were performed on the maize grain samples:

Analyte	Method Mnemonic¹
Acid Detergent Fiber	ADF
Amino Acid Composition	TAA5
Beta Carotene	BCLC
Fatty Acid Profile	FAPM
Ferulic and p-Coumaric Acids	ACID
Folic Acid	FOAN
2-Furaldehyde (Furfural)	FURF
Total Inositol	INOS
Neutral Detergent Fiber	NDFE
Minerals: Calcium, Copper, Iron, Magnesium, Manganese, Phosphorus, Potassium, Sodium, Zinc	ICPS
Phytic Acid	PHYT
Proximates:	
Ash	ASHM
Fat	FAAH
Moisture	M100
Protein	PGEN
Carbohydrate	CHO
Raffinose	SUGT
Selenium	MS1
Starch	STCH
Total Dietary Fiber	TDF
Trypsin Inhibitor	TRIP
Thiamine Hydrochloride	BIDE
Riboflavin (Vitamin B ₂)	B2FV
Niacin (Vitamin B ₃)	NIAP
Pyridoxine Hydrochloride (Vitamin B ₆)	B6A
Vitamin E (Alpha tocopherol)	LCAT

¹Analytical methods are kept on file at Covance Laboratories Inc.

The samples were analyzed singly unless otherwise determined by Covance methods and/or SOPs. A minimum frequency of 10% quality control samples (duplicates, recoveries, certified reference standards, blanks, or validated control samples) were prepared and analyzed at Covance. Any additional analyses or re-analyses were documented and justified in the raw data. If additional processing was necessary, it was documented in the raw data. All analyte measurements were expressed in % dry weight except moisture (% fresh weight) and the limits of quantitation (% fresh weight). Fatty

acid results were reported as % dry weight and % total of fatty acids based on the dry weight results.

DRY WEIGHT CALCULATION

The calculation used to convert the analytical fresh weight results to dry weight results was as follows:

$$\begin{array}{rcl} 100\% - \% \text{Moisture} & = & \text{DW}\% \\ \text{DW}\% \div 100 & = & \text{DWD} \\ \text{FWR} \div \text{DWD} & = & \text{DWR} \end{array}$$

DW - Dry Weight
DWD - Dry Weight Decimal
FWR - Fresh Weight Result
DWR - Dry Weight Result

% OF TOTAL FATTY ACIDS CALCULATION

The fatty acid results were converted to % of total fatty acid results. The calculation used to convert the fatty acid results to % of total fatty acids was as follows:

$$\left(\frac{\text{Fatty Acid}}{\text{(Sum of Quantified FA)}} \right) \times 100 = \text{Fatty Acid as \% of Total Fatty Acids}$$

Note: FA - Fatty Acids

RECORD RETENTION

All raw data, documentation, records, protocol, protocol amendments (if applicable) and final report generated as a result of the study will be archived in the storage facilities of Covance. These materials will be retained by the Covance site at which the work was performed. The Covance archives staff will contact the sponsor after at least 1 year following report finalization to determine disposition of the archived materials (except for the raw data on durable media, study correspondence, stability interval reports and final report which will be kept by Covance). The sponsor will then authorize the transport of the materials to their site (or that of their designee), or authorize the transport of the materials to the archive facilities of EPL Archives, Inc., Sterling, VA (EPL). If the sponsor chooses to transfer materials to EPL, Covance staff will have access to those materials for continued research or regulatory audit.

In the event the sponsor fails to indicate disposition, these materials will be transferred to the EPL storage facilities. The sponsor will be charged annual fees by EPL for the use of their archive facilities.

The supporting records to be retained at Covance but not archived with the study data will include, but not be limited to, the following items:

1. Certificates of Analysis of the reference standards (if applicable)
2. Durable media records
3. Employee training records
4. Instrument calibration and maintenance records
5. Storage temperature records
6. Standard Operating Procedures
7. Reference standard logbooks

RESULTS

The dry weight results for the forage and grain samples are presented in Tables 1 and 2 and were deemed acceptable. Table 3 presents the % of the fatty acids in maize grain calculated from the dry weight results. All of the results are expressed on a dry weight basis with the exception of moisture (% fresh weight). The limits of quantitation listed in Appendix A and in the tables are also expressed on a fresh weight basis.

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L1/E1/R1	L1/E1/R2	L1/E1/R3
Covance LIMS #	90200889	90200923	90200913
Proximate (%)			
Moisture (on a fresh weight basis)	70.4	69.7	70.5
Protein	7.26	7.72	8.95
Total Fat	2.32	2.08	2.28
Ash	3.30	3.66	3.53
Carbohydrates	87.2	86.5	85.1
Acid Detergent Fiber (%)	22.3	28.6	29.9
Neutral Detergent Fiber (%)	35.5	37.0	36.6
Minerals (ppm)			
Calcium 2330		2240	2540
Phosphorus 1690		1710	1770

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L1/E2/R1	L1/E2/R2	L1/E2/R3
Covance LIMS #	90200924	90200887	90200918
Proximate (%)			
Moisture (on a fresh weight basis)	70.1	68.7	67.7
Protein	7.19	7.35	7.31
Total Fat	0.843	2.03	2.31
Ash	3.48	3.96	3.56
Carbohydrates	88.6	86.6	86.8
Acid Detergent Fiber (%)	28.7	23.8	26.6
Neutral Detergent Fiber (%)	41.8	32.3	46.1
Minerals (ppm)			
Calcium	2330	1940	2360
Phosphorus	1490	1490	1590

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L1/E3/R1	L1/E3/R2	L1/E3/R3
Covance LIMS #	90200910	90200905	90200873
Proximate (%)			
Moisture (on a fresh weight basis)	70.2	69.5	70.0
Protein	8.15	7.18	7.90
Total Fat	2.63	2.87	2.36
Ash	4.19	4.07	3.87
Carbohydrates	84.9	85.9	86.0
Acid Detergent Fiber (%)	25.2	24.3	23.5
Neutral Detergent Fiber (%)	40.3	40.7	39.3
Minerals (ppm)			
Calcium	2180	2270	2450
Phosphorus	1750	1580	1810

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L2/E1/R1	L2/E1/R2	L2/E1/R3
Covance LIMS #	90200892	90200902	90200912
Proximate (%)			
Moisture (on a fresh weight basis)	73.3	72.3	70.8
Protein	6.85	7.04	6.99
Total Fat	2.15	1.51	2.38
Ash	4.76	4.12	4.90
Carbohydrates	86.1	87.4	85.6
Acid Detergent Fiber (%)	30.0	29.9	29.2
Neutral Detergent Fiber (%)	36.4	50.9	44.9
Minerals (ppm)			
Calcium	2400	2040	1950
Phosphorus	1420	1600	1480

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L2/E2/R1	L2/E2/R2	L2/E2/R3
Covance LIMS #	90200885	90200880	90200888
Proximate (%)			
Moisture (on a fresh weight basis)	72.7	69.1	72.3
Protein	7.62	6.34	6.35
Total Fat	2.10	2.17	2.06
Ash	5.38	4.11	4.98
Carbohydrates	85.0	87.4	86.6
Acid Detergent Fiber (%)	31.7	28.2	41.5
Neutral Detergent Fiber (%)	47.6	41.7	57.4
Minerals (ppm)			
Calcium	2930	1930	1810
Phosphorus	1560	1420	1390

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L2/E3/R1	L2/E3/R2	L2/E3/R3
Covance LIMS #	90200893	90200911	90200886
Proximate (%)			
Moisture (on a fresh weight basis)	73.1	68.0	72.5
Protein	7.29	6.84	7.56
Total Fat	5.35	2.82	2.63
Ash	5.32	4.28	5.13
Carbohydrates	82.0	85.9	84.7
Acid Detergent Fiber (%)	33.0	23.8	30.1
Neutral Detergent Fiber (%)	43.9	37.2	41.1
Minerals (ppm)			
Calcium	2410	1880	2170
Phosphorus	1860	1400	1590

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L4/E1/R1	L4/E1/R2	L4/E1/R3
Covance LIMS #	90200916	90200894	90200926
Proximate (%)			
Moisture (on a fresh weight basis)	71.9	72.4	73.3
Protein	7.26	7.43	7.68
Total Fat	2.81	1.91	1.74
Ash	3.11	4.20	3.61
Carbohydrates	86.8	86.6	86.9
Acid Detergent Fiber (%)	26.3	28.1	30.0
Neutral Detergent Fiber (%)	52.0	47.8	40.4
Minerals (ppm)			
Calcium	2140	2160	2350
Phosphorus	1760	1840	1750

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L4/E2/R1	L4/E2/R2	L4/E2/R3
Covance LIMS #	90200879	90200908	90200882
Proximate (%)			
Moisture (on a fresh weight basis)	71.1	70.3	72.5
Protein	6.61	7.10	7.16
Total Fat	1.97	2.63	2.30
Ash	4.08	3.91	4.04
Carbohydrates	87.3	86.2	86.5
Acid Detergent Fiber (%)	24.1	19.0	36.2
Neutral Detergent Fiber (%)	40.8	40.1	42.5
Minerals (ppm)			
Calcium	2280	2210	2420
Phosphorus	1470	2030	1940

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L4/E3/R1	L4/E3/R2	L4/E3/R3
Covance LIMS #	90200921	90200898	90200901
Proximate (%)			
Moisture (on a fresh weight basis)	72.3	73.4	72.3
Protein	7.33	7.74	7.55
Total Fat	1.81	1.04	2.04
Ash	3.75	3.95	6.14
Carbohydrates	87.0	87.2	84.1
Acid Detergent Fiber (%)	26.3	26.9	23.9
Neutral Detergent Fiber (%)	44.0	39.1	39.4
Minerals (ppm)			
Calcium	2440	2280	2490
Phosphorus	1710	1690	1930

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L6/E1/R1	L6/E1/R2	L6/E1/R3
Covance LIMS #	90200875	90200876	90200922
Proximate (%)			
Moisture (on a fresh weight basis)	73.2	76.2	78.5
Protein	7.72	8.19	9.30
Total Fat	1.88	1.46	0.893
Ash	4.55	4.01	5.35
Carbohydrates	85.8	86.1	84.7
Acid Detergent Fiber (%)	27.5	34.2	25.7
Neutral Detergent Fiber (%)	48.1	49.6	45.3
Minerals (ppm)			
Calcium	2370	2520	2600
Phosphorus	2210	2400	2870

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L6/E2/R1	L6/E2/R2	L6/E2/R3
Covance LIMS #	90200914	90200915	90200891
Proximate (%)			
Moisture (on a fresh weight basis)	76.1	77.4	76.6
Protein	10.0	8.58	8.63
Total Fat	2.20	1.52	1.59
Ash	3.72	4.60	4.91
Carbohydrates	84.1	85.4	85.0
Acid Detergent Fiber (%)	25.5	30.8	24.7
Neutral Detergent Fiber (%)	45.2	48.7	42.5
Minerals (ppm)			
Calcium	1850	2930	2440
Phosphorus	2890	2790	2350

Table 1
Compositional Analyses of
Maize Forage - Dry Weight

Sample Description	L6/E3/R1	L6/E3/R2	L6/E3/R3
Covance LIMS #	90200881	90200890	90200917
Proximate (%)			
Moisture (on a fresh weight basis)	78.8	75.7	77.6
Protein	8.73	7.49	8.79
Total Fat	1.46	1.26	3.00
Ash	5.33	3.54	5.40
Carbohydrates	84.5	87.7	82.6
Acid Detergent Fiber (%)	25.1	26.2	26.5
Neutral Detergent Fiber (%)	43.9	40.6	41.2
Minerals (ppm)			
Calcium	2910	2460	2720
Phosphorus	2490	2430	2400

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L1/E1/R1	L1/E1/R2	L1/E1/R3
Covance LIMS #	90200975	90200935	90200948
Proximate (%)			
Moisture (on a fresh weight basis)	10.4	9.82	11.4
Protein	10.1	11.0	11.7
Total Fat	4.51	4.37	4.26
Ash	1.44	1.34	1.51
Carbohydrates	83.9	83.2	82.5
Acid Detergent Fiber (%)	2.63	3.04	2.23
Neutral Detergent Fiber (%)	9.36	8.43	8.19
Total Dietary Fiber (%)	11.4	11.1	11.0
Starch (%)	68.0	70.2	69.9
Beta Carotene (mg/100g)	0.140	0.155	0.161
Trypsin Inhibitor (TIU/mg)*	3.31	3.64	2.99
Phytic Acid (%)	0.907	0.874	0.928
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1950	1690	1670
p-Coumaric Acid (ppm)	193	160	153
Raffinose (%)	0.199	0.177	0.160
Folic Acid (mg/100g)	0.0436	0.0457	0.0451
Total Inositol (µg/g)	2200	2540	2230
Thiamine Hydrochloride (mg/100g)	0.435	0.488	0.497
Riboflavin/Vitamin B2 (mg/100g)	0.219	0.174	0.264
Niacin/Vitamin B3 (mg/100g)	3.14	3.81	2.86
Pyridoxine HCl (mg/100g)	0.587	0.658	0.589
Vitamin E (mg/100g)	0.719	0.778	0.763
Selenium (ppb)	76.9	86.1	< LOQ

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L1/E1/R1	L1/E1/R2	L1/E1/R3
Covance LIMS #	90200975	90200935	90200948
Minerals (ppm)			
Calcium	45.2	48.2	49.3
Copper	4.20*	1.76	2.03
Iron	22.0	24.4	24.3
Magnesium	1240	1390	1410
Manganese	5.07	5.94	5.98
Phosphorus	2870	3320	3300
Potassium	3560	3990	3860
Sodium	< LOQ	< LOQ	< LOQ
Zinc	19.9	23.5	23.4
* Confirmed by duplicate retest; average of three results reported.			
Amino Acids (mg/g)			
Aspartic Acid	6.53	7.04	7.64
Threonine	3.56	3.81	4.10
Serine	4.79	4.98	5.51
Glutamic Acid	18.9	21.0	23.4
Proline	7.86	9.48	10.4
Glycine	3.65	3.87	4.05
Alanine	7.59	8.41	9.26
Cystine	2.25	2.31	2.43
Valine	4.75	5.29	5.71
Methionine	2.20	2.26	2.51
Isoleucine	3.57	4.07	4.46
Leucine	12.7	14.2	15.9
Tyrosine	3.35	2.91	2.37
Phenylalanine	4.97	5.68	6.23
Lysine	2.97	3.09	3.19
Histidine	2.78	3.03	3.21
Arginine	4.31	4.54	4.44
Tryptophan	0.623	0.471	0.398

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L1/E1/R1	L1/E1/R2	L1/E1/R3
Covance LIMS #	90200975	90200935	90200948
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.618	0.617	0.641
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0617	0.0629	0.0602
18:1 Oleic	0.897	0.929	0.884
18:2 Linoleic	2.31	2.37	2.34
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0650	0.0633	0.0687
20:0 Arachidic	0.0154	0.0156	0.0142
20:1 Eicosenoic	0.00999	0.0103	0.00958
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00767	0.00912	0.00857

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L1/E2/R1	L1/E2/R2	L1/E2/R3
Covance LIMS #	90200950	90200968	90200978
Proximate (%)			
Moisture (on a fresh weight basis)	11.3	10.5	11.6
Protein	10.3	10.7	10.8
Total Fat	4.72	4.79	4.86
Ash	1.32	1.24	1.32
Carbohydrates	83.7	83.3	83.0
Acid Detergent Fiber (%)	2.51	3.24	2.93
Neutral Detergent Fiber (%)	7.88	9.74	10.2
Total Dietary Fiber (%)	10.6	12.3	12.7
Starch (%)	66.2	73.3	75.5
Beta Carotene (mg/100g)	0.186	0.163	0.164
Trypsin Inhibitor (TIU/mg)*	3.51	3.77	3.46
Phytic Acid (%)	0.831	0.923	0.880
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1720	2010	1920
p-Coumaric Acid (ppm)	167	196	199
Raffinose (%)	0.171	0.185	0.165
Folic Acid (mg/100g)	0.0410	0.0430	0.0463
Total Inositol (µg/g)	1980	2350	2150
Thiamine Hydrochloride (mg/100g)	0.496	0.480	0.452
Riboflavin/Vitamin B2 (mg/100g)	0.240	0.169	0.207
Niacin/Vitamin B3 (mg/100g)	3.38	3.20	3.28
Pyridoxine HCl (mg/100g)	0.719	0.809	0.621
Vitamin E (mg/100g)	0.607	0.772	0.690
Selenium (ppb)	77.5	74.0	85.5

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L1/E2/R1	L1/E2/R2	L1/E2/R3
Covance LIMS #	90200950	90200968	90200978
Minerals (ppm)			
Calcium	45.3	45.1	45.8
Copper	4.36*	1.46	2.86*
Iron	22.0	21.9	22.2
Magnesium	1310	1360	1320
Manganese	4.86	5.09	5.15
Phosphorus	3090	3150	3070
Potassium	3650	3710	3680
Sodium	< LOQ	< LOQ	< LOQ
Zinc	21.9	21.8	22.7
* Confirmed by duplicate retest; average of three results reported.			
Amino Acids (mg/g)			
Aspartic Acid	6.40	6.76	7.05
Threonine	3.54	3.71	3.87
Serine	4.69	5.06	5.19
Glutamic Acid	18.9	19.9	20.9
Proline	8.49	8.38	8.67
Glycine	3.62	3.80	3.97
Alanine	7.58	7.94	8.39
Cystine	2.22	2.36	2.44
Valine	4.74	4.96	5.29
Methionine	2.21	2.34	2.40
Isoleucine	3.52	3.72	3.97
Leucine	12.7	13.3	14.0
Tyrosine	3.30	3.23	3.87
Phenylalanine	5.08	5.22	5.49
Lysine	2.91	3.06	3.20
Histidine	2.77	2.93	3.05
Arginine	4.25	4.60	4.99
Tryptophan	0.440	0.664	0.700

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L1/E2/R1	L1/E2/R2	L1/E2/R3
Covance LIMS #	90200950	90200968	90200978
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.669	0.642	0.660
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0722	0.0675	0.0676
18:1 Oleic	1.02	0.965	0.992
18:2 Linoleic	2.58	2.48	2.56
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0670	0.0644	0.0663
20:0 Arachidic	0.0166	0.0161	0.0158
20:1 Eicosenoic	0.0106	0.0102	0.0102
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00962	0.00851	0.00855

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L1/E3/R1	L1/E3/R2	L1/E3/R3
Covance LIMS #	90200933	90200970	90200965
Proximate (%)			
Moisture (on a fresh weight basis)	10.4	10.7	10.6
Protein	10.9	11.2	12.0
Total Fat	4.42	4.34	4.34
Ash	1.31	1.51	1.51
Carbohydrates	83.3	83.0	82.2
Acid Detergent Fiber (%)	2.51	2.93	2.76
Neutral Detergent Fiber (%)	7.80	8.62	8.72
Total Dietary Fiber (%)	10.4	12.4	11.6
Starch (%)	70.1	62.9	58.3
Beta Carotene (mg/100g)	0.184	0.176	0.174
Trypsin Inhibitor (TIU/mg)*	2.88	3.38	3.71
Phytic Acid (%)	0.920	0.935	0.913
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1660	1880	1920
p-Coumaric Acid (ppm)	158	167	179
Raffinose (%)	0.164	0.169	0.16
Folic Acid (mg/100g)	0.0420	0.0414	0.0426
Total Inositol (µg/g)	2200	2390	2850
Thiamine Hydrochloride (mg/100g)	0.502	0.459	0.481
Riboflavin/Vitamin B2 (mg/100g)	0.176	0.209	0.265
Niacin/Vitamin B3 (mg/100g)	3.59	2.89	2.72
Pyridoxine HCl (mg/100g)	0.782	0.645	0.667
Vitamin E (mg/100g)	0.634	0.725	0.706
Selenium (ppb)	69.8	121	59.5

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L1/E3/R1	L1/E3/R2	L1/E3/R3
Covance LIMS #	90200933	90200970	90200965
Minerals (ppm)			
Calcium	44.5	40.9	41.8
Copper	1.60	1.27	1.32
Iron	23.1	22.7	26.4
Magnesium	1340	1350	1470
Manganese	5.18	5.06	5.74
Phosphorus	3180	3210	3450
Potassium	3740	3590	3940
Sodium	< LOQ	< LOQ	< LOQ
Zinc	22.2	22.3	25.8
Amino Acids (mg/g)			
Aspartic Acid	7.04	7.07	7.68
Threonine	3.87	3.86	4.19
Serine	5.11	5.35	5.82
Glutamic Acid	21.0	21.3	23.4
Proline	9.65	8.80	10.4
Glycine	3.88	3.86	4.13
Alanine	8.37	8.44	9.31
Cystine	2.28	2.43	2.46
Valine	5.20	5.17	5.66
Methionine	2.24	2.39	2.44
Isoleucine	4.00	3.94	4.32
Leucine	14.1	14.2	15.90
Tyrosine	3.56	3.74	3.79
Phenylalanine	5.60	5.53	6.12
Lysine	3.10	3.11	3.27
Histidine	3.00	3.05	3.27
Arginine	4.68	4.88	5.11
Tryptophan	0.472	0.651	0.655

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L1/E3/R1	L1/E3/R2	L1/E3/R3
Covance LIMS #	90200933	90200970	90200965
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.567	0.545	0.582
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0663	0.0581	0.0631
18:1 Oleic	0.932	0.858	0.916
18:2 Linoleic	2.35	2.19	2.19
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0628	0.0606	0.0631
20:0 Arachidic	0.0152	0.0131	0.0140
20:1 Eicosenoic	0.00993	0.00869	0.00914
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00882	0.00676	0.00756

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L2/E1/R1	L2/E1/R2	L2/E1/R3
Covance LIMS #	90200963	90200937	90200956
Proximate (%)			
Moisture (on a fresh weight basis)	10.7	10.2	11.3
Protein	9.80	9.12	9.22
Total Fat	4.84	4.30	4.45
Ash	1.46	1.33	1.22
Carbohydrates	83.9	85.3	85.1
Acid Detergent Fiber (%)	2.88	3.03	2.77
Neutral Detergent Fiber (%)	8.97	9.01	9.04
Total Dietary Fiber (%)	12.7	11.1	11.4
Starch (%)	70.7	73.5	71.4
Beta Carotene (mg/100g)	0.149	0.153	0.150
Trypsin Inhibitor (TIU/mg)*	3.37	2.39	2.93
Phytic Acid (%)	0.858	0.888	0.775
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1870	1700	1670
p-Coumaric Acid (ppm)	202	204	184
Raffinose (%)	0.146	0.161	0.192
Folic Acid (mg/100g)	0.0403	0.0402	0.0460
Total Inositol (µg/g)	3060	2370	2120
Thiamine Hydrochloride (mg/100g)	0.459	0.457	0.451
Riboflavin/Vitamin B2 (mg/100g)	0.208	0.156	0.161
Niacin/Vitamin B3 (mg/100g)	2.53	3.95	4.11
Pyridoxine HCl (mg/100g)	0.626	0.722	0.632
Vitamin E (mg/100g)	0.838	0.815	0.802
Selenium (ppb)	167	78.5	93.0

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L2/E1/R1	L2/E1/R2	L2/E1/R3
Covance LIMS #	90200963	90200937	90200956
Minerals (ppm)			
Calcium	42.3	38.6	44.0
Copper	1.30	1.38	1.38
Iron	22.7	21.2	23.2
Magnesium	1380	1310	1230
Manganese	5.24	5.32	4.92
Phosphorus	3050	2900	2620
Potassium	3560	3460	3400
Sodium	< LOQ	< LOQ	< LOQ
Zinc	19.5	20.5	21.3
Amino Acids (mg/g)			
Aspartic Acid	6.16	5.82	5.84
Threonine	3.38	3.21	3.19
Serine	4.56	4.10	4.19
Glutamic Acid	17.5	16.4	16.5
Proline	8.15	7.64	7.55
Glycine	3.63	3.52	3.52
Alanine	7.04	6.64	6.67
Cystine	2.16	2.07	2.12
Valine	4.51	4.33	4.36
Methionine	2.05	1.97	2.05
Isoleucine	3.36	3.24	3.19
Leucine	11.6	10.8	10.9
Tyrosine	3.10	3.04	1.57
Phenylalanine	4.66	4.48	4.34
Lysine	2.90	2.77	2.76
Histidine	2.69	2.57	2.59
Arginine	4.55	4.29	3.72
Tryptophan	0.615	0.381	0.487

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L2/E1/R1	L2/E1/R2	L2/E1/R3
Covance LIMS #	90200963	90200937	90200956
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.682	0.665	0.660
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0736	0.0753	0.0759
18:1 Oleic	1.01	1.00	0.976
18:2 Linoleic	2.45	2.41	2.31
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0702	0.0725	0.0699
20:0 Arachidic	0.0168	0.0168	0.0169
20:1 Eicosenoic	0.0105	0.0103	0.0100
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00900	0.00894	0.00955

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L2/E2/R1	L2/E2/R2	L2/E2/R3
Covance LIMS #	90200979	90200959	90200947
Proximate (%)			
Moisture (on a fresh weight basis)	10.1	10.7	12.2
Protein	10.3	9.83	9.78
Total Fat	4.83	4.70	4.51
Ash	1.27	1.09	1.40
Carbohydrates	83.6	84.4	84.3
Acid Detergent Fiber (%)	2.53	3.00	2.49
Neutral Detergent Fiber (%)	8.72	9.18	8.29
Total Dietary Fiber (%)	11.0	11.3	11.2
Starch (%)	74.3	77.3	72.4
Beta Carotene (mg/100g)	0.167	0.16	0.174
Trypsin Inhibitor (TIU/mg)*	3.58	3.33	3.52
Phytic Acid (%)	0.932	0.729	0.882
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1910	1950	1620
p-Coumaric Acid (ppm)	226	218	177
Raffinose (%)	0.179	0.188	0.166
Folic Acid (mg/100g)	0.0405	0.0419	0.0448
Total Inositol (µg/g)	2340	2230	2120
Thiamine Hydrochloride (mg/100g)	0.456	0.493	0.478
Riboflavin/Vitamin B2 (mg/100g)	0.152	0.216	0.237
Niacin/Vitamin B3 (mg/100g)	3.08	3.57	3.33
Pyridoxine HCl (mg/100g)	0.730	0.669	0.654
Vitamin E (mg/100g)	0.763	0.777	0.814
Selenium (ppb)	184	98.0	91.9

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L2/E2/R1	L2/E2/R2	L2/E2/R3
Covance LIMS #	90200979	90200959	90200947
Minerals (ppm)			
Calcium	40.7	40.4	41.9
Copper	2.15	1.35	2.14
Iron	24.1	23.1	22.2
Magnesium	1370	1270	1370
Manganese	5.43	4.92	5.59
Phosphorus	2910	2650	3150
Potassium	3240	3310	3660
Sodium	< LOQ	< LOQ	< LOQ
Zinc	22.4	22.1	21.8
Amino Acids (mg/g)			
Aspartic Acid	6.38	6.17	6.26
Threonine	3.54	3.46	3.44
Serine	4.74	4.70	4.44
Glutamic Acid	18.7	18.1	18.0
Proline	7.84	8.50	8.21
Glycine	3.76	3.74	3.76
Alanine	7.45	7.22	7.22
Cystine	2.38	2.27	2.14
Valine	4.74	4.57	4.68
Methionine	2.34	2.26	2.08
Isoleucine	3.57	3.37	3.53
Leucine	12.5	12.0	12.0
Tyrosine	3.39	3.14	2.54
Phenylalanine	4.92	4.73	4.92
Lysine	2.97	2.92	2.97
Histidine	2.84	2.78	2.78
Arginine	4.76	4.37	4.20
Tryptophan	0.666	0.570	0.380

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L2/E2/R1	L2/E2/R2	L2/E2/R3
Covance LIMS #	90200979	90200959	90200947
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.663	0.638	0.669
16:1 Palmitoleic	< LOQ	< LOQ	0.0189
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0768	0.0774	0.0910
18:1 Oleic	1.03	1.02	1.04
18:2 Linoleic	2.49	2.33	2.28
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0665	0.0641	0.0649
20:0 Arachidic	0.0167	0.0167	0.0159
20:1 Eicosenoic	0.0101	0.00972	0.0104
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00848	0.00849	0.00875

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L2/E3/R1	L2/E3/R2	L2/E3/R3
Covance LIMS #	90200972	90200957	90200960
Proximate (%)			
Moisture (on a fresh weight basis)	10.3	9.60	12.2
Protein	9.49	9.79	9.74
Total Fat	4.77	4.50	4.79
Ash	1.32	1.35	1.40
Carbohydrates	84.4	84.4	84.1
Acid Detergent Fiber (%)	2.92	2.72	3.00
Neutral Detergent Fiber (%)	9.46	8.24	8.76
Total Dietary Fiber (%)	11.6	11.6	12.2
Starch (%)	72.1	75.6	75.7
Beta Carotene (mg/100g)	0.158	0.179	0.157
Trypsin Inhibitor (TIU/mg)*	3.26	3.26	3.53
Phytic Acid (%)	0.95	0.728	0.789
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1950	1680	2070
p-Coumaric Acid (ppm)	204	175	229
Raffinose (%)	0.177	0.190	0.198
Folic Acid (mg/100g)	0.0381	0.0425	0.0397
Total Inositol (µg/g)	2120	2200	2540
Thiamine Hydrochloride (mg/100g)	0.446	0.442	0.478
Riboflavin/Vitamin B2 (mg/100g)	0.162	0.202	0.214
Niacin/Vitamin B3 (mg/100g)	3.02	3.50	3.64
Pyridoxine HCl (mg/100g)	0.780	0.634	0.672
Vitamin E (mg/100g)	0.735	0.702	0.785
Selenium (ppb)	186	65.5	81.8

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L2/E3/R1	L2/E3/R2	L2/E3/R3
Covance LIMS #	90200972	90200957	90200960
Minerals (ppm)			
Calcium	38.9	41.4	42.0
Copper	1.20	1.28	1.34
Iron	22.0	22.9	23.2
Magnesium	1400	1310	1330
Manganese	5.08	4.87	5.01
Phosphorus	3110	2750	2900
Potassium	3480	3400	3550
Sodium	< LOQ	< LOQ	< LOQ
Zinc	19.5	21.0	20.6
Amino Acids (mg/g)			
Aspartic Acid	6.02	5.98	6.23
Threonine	3.37	3.29	3.37
Serine	4.52	4.38	4.53
Glutamic Acid	17.2	17.6	17.8
Proline	7.44	8.08	8.31
Glycine	3.59	3.57	3.67
Alanine	6.88	7.04	7.18
Cystine	2.23	2.20	2.23
Valine	4.40	4.50	4.54
Methionine	2.08	2.09	2.10
Isoleucine	3.19	3.35	3.36
Leucine	11.3	11.6	11.7
Tyrosine	3.14	1.84	1.39
Phenylalanine	4.54	4.59	4.61
Lysine	2.89	2.81	2.90
Histidine	2.69	2.71	2.73
Arginine	4.52	3.94	3.75
Tryptophan	0.577	0.612	0.567

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L2/E3/R1	L2/E3/R2	L2/E3/R3
Covance LIMS #	90200972	90200957	90200960
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.612	0.621	0.628
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0712	0.0757	0.0772
18:1 Oleic	0.994	1.01	1.04
18:2 Linoleic	2.36	2.38	2.43
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0674	0.0671	0.0678
20:0 Arachidic	0.0156	0.0159	0.0170
20:1 Eicosenoic	0.00974	0.00985	0.0104
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00792	0.00887	0.00911

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L4/E1/R1	L4/E1/R2	L4/E1/R3
Covance LIMS #	90200961	90200977	90200980
Proximate (%)			
Moisture (on a fresh weight basis)	9.94	9.83	9.54
Protein	11.3	11.3	10.3
Total Fat	4.93	4.85	4.73
Ash	1.31	1.46	1.48
Carbohydrates	82.4	82.4	83.5
Acid Detergent Fiber (%)	2.84	2.77	2.92
Neutral Detergent Fiber (%)	9.52	9.24	8.85
Total Dietary Fiber (%)	10.9	13.0	10.8
Starch (%)	73.5	72.8	71.2
Beta Carotene (mg/100g)	0.144	0.145	0.133
Trypsin Inhibitor (TIU/mg)*	3.04	3.28	4.42
Phytic Acid (%)	0.959	1.03	1.01
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	2190	2130	2090
p-Coumaric Acid (ppm)	229	224	226
Raffinose (%)	0.157	0.163	0.172
Folic Acid (mg/100g)	0.0381	0.0407	0.0392
Total Inositol (µg/g)	3160	2450	2760
Thiamine Hydrochloride (mg/100g)	0.511	0.455	0.497
Riboflavin/Vitamin B2 (mg/100g)	0.187	0.182	0.221
Niacin/Vitamin B3 (mg/100g)	3.50	2.62	3.35
Pyridoxine HCl (mg/100g)	0.744	0.706	0.768
Vitamin E (mg/100g)	0.857	0.989	0.934
Selenium (ppb)	361	363	321

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L4/E1/R1	L4/E1/R2	L4/E1/R3
Covance LIMS #	90200961	90200977	90200980
Minerals (ppm)			
Calcium	39.3	38.9	40.8
Copper	1.12	1.50	1.74
Iron	28.0	27.5	26.2
Magnesium	1310	1360	1220
Manganese	5.20	5.37	4.69
Phosphorus	3330	3330	3220
Potassium	3800	3470	3700
Sodium	< LOQ	< LOQ	< LOQ
Zinc	25.5	26.9	24.7
Amino Acids (mg/g)			
Aspartic Acid	7.14	7.26	6.49
Threonine	3.92	3.97	3.54
Serine	5.50	5.43	4.81
Glutamic Acid	21.4	21.5	18.6
Proline	10.1	9.16	7.98
Glycine	4.14	4.19	3.80
Alanine	8.59	8.63	7.48
Cystine	2.34	2.46	2.28
Valine	5.30	5.42	4.78
Methionine	2.32	2.35	2.17
Isoleucine	4.05	4.16	3.63
Leucine	14.4	14.5	12.5
Tyrosine	2.03	3.98	3.46
Phenylalanine	5.71	5.79	5.01
Lysine	3.23	3.32	3.02
Histidine	3.11	3.16	2.81
Arginine	4.72	5.43	4.91
Tryptophan	0.642	0.704	0.693

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L4/E1/R1	L4/E1/R2	L4/E1/R3
Covance LIMS #	90200961	90200977	90200980
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.685	0.683	0.674
16:1 Palmitoleic	0.00597	0.00594	0.00558
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0785	0.0745	0.0757
18:1 Oleic	1.11	1.09	1.09
18:2 Linoleic	2.38	2.41	2.35
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0688	0.0688	0.0670
20:0 Arachidic	0.0173	0.0165	0.0171
20:1 Eicosenoic	0.0107	0.0106	0.0106
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00935	0.00813	0.00864

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L4/E2/R1	L4/E2/R2	L4/E2/R3
Covance LIMS #	90200951	90200954	90200966
Proximate (%)			
Moisture (on a fresh weight basis)	9.47	9.30	9.68
Protein	9.20	11.4	10.9
Total Fat	4.79	4.65	5.09
Ash	1.30	1.51	1.35
Carbohydrates	84.7	82.5	82.7
Acid Detergent Fiber (%)	2.81	2.78	2.59
Neutral Detergent Fiber (%)	7.93	9.07	8.96
Total Dietary Fiber (%)	11.0	12.2	12.4
Starch (%)	68.6	66.2	63.1
Beta Carotene (mg/100g)	0.158	0.165	0.155
Trypsin Inhibitor (TIU/mg)*	3.71	3.55	3.93
Phytic Acid (%)	0.990	1.06	0.968
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1970	1870	2090
p-Coumaric Acid (ppm)	199	202	226
Raffinose (%)	0.171	0.179	0.176
Folic Acid (mg/100g)	0.0353	0.0352	0.0374
Total Inositol (µg/g)	2730	2680	2870
Thiamine Hydrochloride (mg/100g)	0.508	0.518	0.487
Riboflavin/Vitamin B2 (mg/100g)	0.182	0.162	0.163
Niacin/Vitamin B3 (mg/100g)	3.37	3.32	2.92
Pyridoxine HCl (mg/100g)	0.740	0.742	0.761
Vitamin E (mg/100g)	0.866	0.949	0.897
Selenium (ppb)	331	400	360

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L4/E2/R1	L4/E2/R2	L4/E2/R3
Covance LIMS #	90200951	90200954	90200966
Minerals (ppm)			
Calcium	40.3	42.1	41.3
Copper	1.30	1.26	1.28
Iron	27.1	28.1	27.3
Magnesium	1230	1370	1250
Manganese	4.86	5.58	4.89
Phosphorus	3310	3530	3400
Potassium	3720	3770	3790
Sodium	< LOQ	< LOQ	< LOQ
Zinc	27.0	27.9	25.4
Amino Acids (mg/g)			
Aspartic Acid	7.00	7.06	6.86
Threonine	3.83	3.87	3.82
Serine	5.31	5.35	5.30
Glutamic Acid	21.1	21.3	20.4
Proline	10.0	9.98	9.37
Glycine	4.15	4.15	4.10
Alanine	8.45	8.58	8.17
Cystine	2.36	2.38	2.33
Valine	5.36	5.40	5.13
Methionine	2.39	2.34	2.34
Isoleucine	4.05	4.12	3.85
Leucine	14.2	14.4	13.6
Tyrosine	3.58	3.42	3.55
Phenylalanine	5.67	5.76	5.46
Lysine	3.21	3.22	3.24
Histidine	3.13	3.15	3.06
Arginine	5.32	5.28	5.28
Tryptophan	0.610	0.528	0.626

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L4/E2/R1	L4/E2/R2	L4/E2/R3
Covance LIMS #	90200951	90200954	90200966
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.644	0.662	0.683
16:1 Palmitoleic	0.00555	0.00574	0.00595
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0788	0.0806	0.0835
18:1 Oleic	1.06	1.12	1.16
18:2 Linoleic	2.31	2.41	2.48
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0620	0.0636	0.0667
20:0 Arachidic	0.0163	0.0171	0.0178
20:1 Eicosenoic	0.0100	0.0105	0.0109
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00897	0.00960	0.00922

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L4/E3/R1	L4/E3/R2	L4/E3/R3
Covance LIMS #	90200931	90200938	90200934
Proximate (%)			
Moisture (on a fresh weight basis)	9.66	9.37	9.33
Protein	11.4	11.6	11.1
Total Fat	4.67	4.49	4.63
Ash	1.54	1.29	1.38
Carbohydrates	82.4	82.6	82.8
Acid Detergent Fiber (%)	2.97	3.06	2.56
Neutral Detergent Fiber (%)	8.45	8.45	7.85
Total Dietary Fiber (%)	11.4	11.3	10.5
Starch (%)	74.1	73.2	72.9
Beta Carotene (mg/100g)	0.191	0.186	0.168
Trypsin Inhibitor (TIU/mg)*	3.20	2.91	3.40
Phytic Acid (%)	0.955	0.978	0.939
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1880	1910	1810
p-Coumaric Acid (ppm)	180	192	184
Raffinose (%)	0.185	0.171	0.165
Folic Acid (mg/100g)	0.0382	0.0385	0.0364
Total Inositol (µg/g)	2470	2690	1900
Thiamine Hydrochloride (mg/100g)	0.509	0.508	0.518
Riboflavin/Vitamin B2 (mg/100g)	0.166	0.161	0.167
Niacin/Vitamin B3 (mg/100g)	3.63	3.30	3.81
Pyridoxine HCl (mg/100g)	0.702	0.877	0.782
Vitamin E (mg/100g)	0.847	1.09	0.818
Selenium (ppb)	335	407	304

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L4/E3/R1	L4/E3/R2	L4/E3/R3
Covance LIMS #	90200931	90200938	90200934
Minerals (ppm)			
Calcium	39.4	40.9	38.8
Copper	1.25	1.32	1.35
Iron	27.2	24.8	28.6
Magnesium	1300	1290	1290
Manganese	4.85	4.59	4.61
Phosphorus	3300	3340	3260
Potassium	3590	3640	3540
Sodium	< LOQ	< LOQ	< LOQ
Zinc	25.5	25.0	26.2
Amino Acids (mg/g)			
Aspartic Acid	7.31	6.73	7.00
Threonine	4.02	3.75	3.86
Serine	5.39	5.22	5.15
Glutamic Acid	21.7	20.4	20.8
Proline	10.1	9.35	9.86
Glycine	4.16	3.77	4.07
Alanine	8.69	8.14	8.36
Cystine	2.41	2.39	2.37
Valine	5.39	4.84	5.24
Methionine	2.31	2.41	2.29
Isoleucine	4.17	3.74	4.07
Leucine	14.5	13.7	14.0
Tyrosine	3.61	3.64	2.99
Phenylalanine	5.89	5.51	5.70
Lysine	3.25	2.92	3.19
Histidine	3.13	2.84	3.09
Arginine	5.08	4.72	4.79
Tryptophan	0.556	0.505	0.538

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L4/E3/R1	L4/E3/R2	L4/E3/R3
Covance LIMS #	90200931	90200938	90200934
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.589	0.600	0.588
16:1 Palmitoleic	< LOQ	< LOQ	0.00553
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0749	0.0736	0.0797
18:1 Oleic	1.05	1.07	1.11
18:2 Linoleic	2.22	2.24	2.29
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0588	0.0594	0.0600
20:0 Arachidic	0.0163	0.0160	0.0169
20:1 Eicosenoic	0.0101	0.0103	0.0102
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00942	0.00939	0.00926

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L6/E1/R1	L6/E1/R2	L6/E1/R3
Covance LIMS #	90200955	90200964	90200930
Proximate (%)			
Moisture (on a fresh weight basis)	9.56	9.96	9.85
Protein	12.6	12.4	12.1
Total Fat	4.78	4.64	4.36
Ash	1.58	1.53	1.51
Carbohydrates	81.0	81.4	82.0
Acid Detergent Fiber (%)	2.40	2.81	3.34
Neutral Detergent Fiber (%)	8.75	9.33	9.22
Total Dietary Fiber (%)	12.5	13.4	11.5
Starch (%)	67.9	62.0	72.0
Beta Carotene (mg/100g)	0.170	0.162	0.185
Trypsin Inhibitor (TIU/mg)*	3.98	3.29	3.05
Phytic Acid (%)	0.954	0.671	0.901
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1960	2190	1900
p-Coumaric Acid (ppm)	161	200	169
Raffinose (%)	0.171	0.165	0.164
Folic Acid (mg/100g)	0.0450	0.0401	0.0429
Total Inositol (µg/g)	2530	2700	2350
Thiamine Hydrochloride (mg/100g)	0.420	0.433	0.444
Riboflavin/Vitamin B2 (mg/100g)	0.232	0.234	0.174
Niacin/Vitamin B3 (mg/100g)	2.63	3.17	2.86
Pyridoxine HCl (mg/100g)	0.640	0.727	0.729
Vitamin E (mg/100g)	0.913	0.941	0.996
Selenium (ppb)	58.4	< LOQ	< LOQ

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L6/E1/R1	L6/E1/R2	L6/E1/R3
Covance LIMS #	90200955	90200964	90200930
Minerals (ppm)			
Calcium	45.4	49.2	45.4
Copper	0.890	0.890	1.06
Iron	22.2	23.4	21.9
Magnesium	1330	1390	1320
Manganese	6.37	6.60	6.34
Phosphorus	3260	3430	3460
Potassium	3790	3980	3990
Sodium	< LOQ	< LOQ	< LOQ
Zinc	22.7	22.7	21.0
Amino Acids (mg/g)			
Aspartic Acid	8.15	7.80	7.73
Threonine	4.39	4.30	4.24
Serine	6.10	5.99	5.73
Glutamic Acid	24.9	23.4	23.7
Proline	11.0	10.8	10.9
Glycine	4.39	4.24	4.22
Alanine	9.97	9.38	9.44
Cystine	2.49	2.41	2.50
Valine	6.08	5.64	5.75
Methionine	2.43	2.39	2.44
Isoleucine	4.77	4.36	4.54
Leucine	17.1	16.0	16.1
Tyrosine	4.18	4.03	2.41
Phenylalanine	6.68	6.29	6.40
Lysine	3.36	3.32	3.24
Histidine	3.44	3.27	3.31
Arginine	5.56	5.46	4.66
Tryptophan	0.621	0.690	0.562

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L6/E1/R1	L6/E1/R2	L6/E1/R3
Covance LIMS #	90200955	90200964	90200930
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.713	0.689	0.610
16:1 Palmitoleic	0.00589	0.00562	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0733	0.0735	0.0664
18:1 Oleic	1.08	1.06	0.966
18:2 Linoleic	2.47	2.35	2.21
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0722	0.0696	0.0621
20:0 Arachidic	0.0161	0.0159	0.0146
20:1 Eicosenoic	0.0108	0.0105	0.00984
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00986	0.00966	0.00936

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L6/E2/R1	L6/E2/R2	L6/E2/R3
Covance LIMS #	90200974	90200962	90200971
Proximate (%)			
Moisture (on a fresh weight basis)	9.21	10.1	9.38
Protein	11.9	12.6	13.0
Total Fat	4.76	4.82	4.73
Ash	1.65	1.67	1.53
Carbohydrates	81.7	80.9	80.7
Acid Detergent Fiber (%)	2.47	3.33	2.80
Neutral Detergent Fiber (%)	8.84	8.70	9.14
Total Dietary Fiber (%)	12.0	11.8	13.5
Starch (%)	64.3	73.3	65.7
Beta Carotene (mg/100g)	0.185	0.185	0.194
Trypsin Inhibitor (TIU/mg)*	3.92	3.37	3.64
Phytic Acid (%)	1.03	0.904	0.961
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1970	1960	2040
p-Coumaric Acid (ppm)	191	172	191
Raffinose (%)	0.171	0.178	0.170
Folic Acid (mg/100g)	0.0398	0.0430	0.0392
Total Inositol (µg/g)	2520	2600	2450
Thiamine Hydrochloride (mg/100g)	0.408	0.434	0.430
Riboflavin/Vitamin B2 (mg/100g)	0.208	0.318	0.213
Niacin/Vitamin B3 (mg/100g)	2.67	3.34	2.54
Pyridoxine HCl (mg/100g)	0.805	0.692	0.751
Vitamin E (mg/100g)	0.887	1.000	0.918
Selenium (ppb)	62.7	< LOQ	60.7

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L6/E2/R1	L6/E2/R2	L6/E2/R3
Covance LIMS #	90200974	90200962	90200971
Minerals (ppm)			
Calcium	45.8	50.1	47.1
Copper	1.08	1.16	1.02
Iron	21.5	23.5	22.5
Magnesium	1280	1360	1420
Manganese	6.34	6.08	6.32
Phosphorus	3460	3600	3400
Potassium	3900	4150	3740
Sodium	< LOQ	< LOQ	< LOQ
Zinc	20.5	21.2	22.4
Amino Acids (mg/g)			
Aspartic Acid	7.16	7.84	8.20
Threonine	4.02	4.18	4.47
Serine	5.65	5.92	6.28
Glutamic Acid	22.0	24.5	25.3
Proline	9.21	10.9	10.3
Glycine	3.94	4.24	4.35
Alanine	8.75	9.68	10.0
Cystine	2.47	2.55	2.59
Valine	5.21	5.95	6.01
Methionine	2.46	2.55	2.56
Isoleucine	4.03	4.64	4.71
Leucine	15.0	16.6	17.3
Tyrosine	3.98	2.34	2.85
Phenylalanine	5.82	6.41	6.70
Lysine	3.01	3.25	3.38
Histidine	3.07	3.33	3.43
Arginine	4.95	4.68	5.14
Tryptophan	0.691	0.656	0.626

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L6/E2/R1	L6/E2/R2	L6/E2/R3
Covance LIMS #	90200974	90200962	90200971
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.622	0.669	0.635
16:1 Palmitoleic	< LOQ	0.00583	0.00567
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0719	0.0745	0.0732
18:1 Oleic	1.03	1.06	1.05
18:2 Linoleic	2.34	2.44	2.37
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0630	0.0673	0.0663
20:0 Arachidic	0.0155	0.0161	0.0156
20:1 Eicosenoic	0.0101	0.0104	0.00994
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00876	0.00884	0.00862

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L6/E3/R1	L6/E3/R2	L6/E3/R3
Covance LIMS #	90200949	90200976	90200945
Proximate (%)			
Moisture (on a fresh weight basis)	9.82	9.23	9.11
Protein	12.8	11.8	12.2
Total Fat	4.55	4.56	4.43
Ash	1.54	1.67	1.55
Carbohydrates	81.2	82.0	81.8
Acid Detergent Fiber (%)	2.65	2.94	2.78
Neutral Detergent Fiber (%)	8.83	8.70	9.09
Total Dietary Fiber (%)	11.6	12.3	11.6
Starch (%)	65.6	68.6	64.1
Beta Carotene (mg/100g)	0.196	0.165	0.185
Trypsin Inhibitor (TIU/mg)*	3.52	3.55	3.59
Phytic Acid (%)	0.912	1.01	0.997
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1840	2020	1950
p-Coumaric Acid (ppm)	157	184	180
Raffinose (%)	0.139	0.164	0.154
Folic Acid (mg/100g)	0.0388	0.0434	0.0428
Total Inositol (µg/g)	2260	2490	2260
Thiamine Hydrochloride (mg/100g)	0.432	0.397	0.418
Riboflavin/Vitamin B2 (mg/100g)	0.277	0.209	0.256
Niacin/Vitamin B3 (mg/100g)	2.71	2.63	2.97
Pyridoxine HCl (mg/100g)	0.732	0.778	0.761
Vitamin E (mg/100g)	0.900	0.895	0.946
Selenium (ppb)	85.7	65.8	61.8

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L6/E3/R1	L6/E3/R2	L6/E3/R3
Covance LIMS #	90200949	90200976	90200945
Minerals (ppm)			
Calcium	50.5	45.6	46.6
Copper	1.76	1.61	1.29
Iron	24.5	21.7	22.6
Magnesium	1390	1270	1320
Manganese	6.29	6.15	6.21
Phosphorus	3440	3290	3410
Potassium	3940	3880	3970
Sodium	< LOQ	< LOQ	< LOQ
Zinc	23.2	20.4	21.6
Amino Acids (mg/g)			
Aspartic Acid	7.65	7.51	7.71
Threonine	4.21	4.04	4.19
Serine	5.82	5.51	5.61
Glutamic Acid	23.4	22.5	23.3
Proline	10.7	9.33	10.3
Glycine	4.06	4.16	4.18
Alanine	9.33	8.92	9.25
Cystine	2.54	2.57	2.38
Valine	5.30	5.56	5.70
Methionine	2.50	2.42	2.30
Isoleucine	4.27	4.32	4.47
Leucine	16.1	15.2	15.8
Tyrosine	3.99	4.13	3.86
Phenylalanine	6.18	5.96	6.33
Lysine	3.08	3.25	3.25
Histidine	3.14	3.22	3.25
Arginine	4.96	5.35	5.13
Tryptophan	0.562	0.705	0.486

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L6/E3/R1	L6/E3/R2	L6/E3/R3
Covance LIMS #	90200949	90200976	90200945
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.620	0.596	0.545
16:1 Palmitoleic	0.00557	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0721	0.0716	0.0665
18:1 Oleic	1.05	1.02	0.944
18:2 Linoleic	2.36	2.29	2.15
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0674	0.0647	0.0607
20:0 Arachidic	0.0150	0.0152	0.0140
20:1 Eicosenoic	0.00987	0.00961	0.00896
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00893	0.00819	0.00762

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L7/E1/R1	L7/E1/R2	L7/E1/R3
Covance LIMS #	90200969	90200953	90200928
Proximate (%)			
Moisture (on a fresh weight basis)	10.2	9.90	10.5
Protein	10.9	10.1	10.8
Total Fat	4.50	3.85	4.40
Ash	1.60	1.43	1.54
Carbohydrates	83.0	84.6	83.2
Acid Detergent Fiber (%)	2.54	2.79	2.29
Neutral Detergent Fiber (%)	8.45	8.80	8.41
Total Dietary Fiber (%)	12.4	12.3	11.4
Starch (%)	63.8	69.9	64.0
Beta Carotene (mg/100g)	0.157	0.142	0.171
Trypsin Inhibitor (TIU/mg)*	2.9	2.97	4.32
Phytic Acid (%)	0.968	0.859	0.908
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1860	1730	1810
p-Coumaric Acid (ppm)	163	153	161
Raffinose (%)	0.143	0.139	0.134
Folic Acid (mg/100g)	0.0305	0.0317	0.0330
Total Inositol (µg/g)	2270	2530	2610
Thiamine Hydrochloride (mg/100g)	0.434	0.422	0.447
Riboflavin/Vitamin B2 (mg/100g)	0.173	0.166	0.211
Niacin/Vitamin B3 (mg/100g)	2.73	3.41	3.34
Pyridoxine HCl (mg/100g)	0.718	0.675	0.769
Vitamin E (mg/100g)	1.11	0.99	1.11
Selenium (ppb)	63.4	< LOQ	< LOQ

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L7/E1/R1	L7/E1/R2	L7/E1/R3
Covance LIMS #	90200969	90200953	90200928
Minerals (ppm)			
Calcium	46.9	45.5	48.0
Copper	1.18	1.28	1.63
Iron	24.3	23.1	25.5
Magnesium	1310	1150	1270
Manganese	6.38	5.97	6.61
Phosphorus	3300	3040	3340
Potassium	3640	3720	3890
Sodium	< LOQ	< LOQ	< LOQ
Zinc	22.8	23.2	26.4
Amino Acids (mg/g)			
Aspartic Acid	6.75	6.49	6.84
Threonine	3.74	3.53	3.78
Serine	5.17	4.72	5.04
Glutamic Acid	19.9	18.3	19.8
Proline	8.65	8.50	9.30
Glycine	3.93	3.92	3.99
Alanine	8.04	7.50	8.01
Cystine	2.35	2.21	2.39
Valine	4.92	4.85	4.97
Methionine	2.44	2.26	2.42
Isoleucine	3.80	3.60	3.83
Leucine	13.5	12.2	13.2
Tyrosine	3.66	3.29	3.35
Phenylalanine	5.38	4.97	5.45
Lysine	3.03	3.09	3.12
Histidine	2.94	2.83	2.95
Arginine	5.07	4.99	4.99
Tryptophan	0.619	0.555	0.487

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L7/E1/R1	L7/E1/R2	L7/E1/R3
Covance LIMS #	90200969	90200953	90200928
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.636	0.546	0.623
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0787	0.0717	0.0800
18:1 Oleic	1.08	0.901	1.09
18:2 Linoleic	2.18	1.90	2.15
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0639	0.0558	0.0599
20:0 Arachidic	0.0175	0.0159	0.0178
20:1 Eicosenoic	0.0107	0.00919	0.0107
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00922	0.00870	0.0102

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L7/E2/R1	L7/E2/R2	L7/E2/R3
Covance LIMS #	90200941	90200952	90200946
Proximate (%)			
Moisture (on a fresh weight basis)	10.5	10.1	10.2
Protein	10.3	10.7	11.0
Total Fat	4.53	4.72	4.43
Ash	1.54	1.30	1.30
Carbohydrates	83.7	83.3	83.3
Acid Detergent Fiber (%)	2.89	2.89	3.14
Neutral Detergent Fiber (%)	8.73	7.79	8.83
Total Dietary Fiber (%)	11.2	11.8	11.1
Starch (%)	70.3	71.2	65.3
Beta Carotene (mg/100g)	0.190	0.168	0.169
Trypsin Inhibitor (TIU/mg)*	2.55	3.94	3.36
Phytic Acid (%)	1.01	0.932	1.01
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1750	1680	1830
p-Coumaric Acid (ppm)	153	148	161
Raffinose (%)	0.154	0.167	0.146
Folic Acid (mg/100g)	0.0316	0.0289	0.0293
Total Inositol (µg/g)	3030	2660	2190
Thiamine Hydrochloride (mg/100g)	0.436	0.423	0.445
Riboflavin/Vitamin B2 (mg/100g)	0.168	0.176	0.173
Niacin/Vitamin B3 (mg/100g)	3.21	3.14	3.41
Pyridoxine HCl (mg/100g)	0.734	0.727	0.815
Vitamin E (mg/100g)	1.10	1.09	1.07
Selenium (ppb)	107	< LOQ	81.5

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L7/E2/R1	L7/E2/R2	L7/E2/R3
Covance LIMS #	90200941	90200952	90200946
Minerals (ppm)			
Calcium	44.5	44.7	47.4
Copper	2.96*	1.47	1.84
Iron	22.1	24.2	23.8
Magnesium	1340	1220	1330
Manganese	5.97	6.08	6.38
Phosphorus	3530	3260	3460
Potassium	3930	3780	3940
Sodium	< LOQ	< LOQ	< LOQ
Zinc	23.8	24.0	23.8
Amino Acids (mg/g)			
Aspartic Acid	6.00	6.61	6.83
Threonine	3.36	3.62	3.85
Serine	4.60	4.96	5.24
Glutamic Acid	17.4	19.5	20.0
Proline	8.18	9.09	9.50
Glycine	3.61	3.96	4.02
Alanine	7.06	7.86	8.13
Cystine	2.31	2.27	2.39
Valine	4.28	4.99	4.94
Methionine	2.35	2.34	2.47
Isoleucine	3.23	3.77	3.75
Leucine	11.5	13.0	13.5
Tyrosine	3.11	3.37	3.70
Phenylalanine	4.76	5.25	5.53
Lysine	2.74	3.04	3.12
Histidine	2.57	2.91	2.97
Arginine	4.39	5.06	5.07
Tryptophan	0.484	0.591	0.430

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L7/E2/R1	L7/E2/R2	L7/E2/R3
Covance LIMS #	90200941	90200952	90200946
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.626	0.648	0.628
16:1 Palmitoleic	< LOQ	0.00556	0.00586
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0811	0.0831	0.0790
18:1 Oleic	1.07	1.09	1.07
18:2 Linoleic	2.18	2.28	2.23
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0592	0.0630	0.0597
20:0 Arachidic	0.0177	0.0181	0.0170
20:1 Eicosenoic	0.0106	0.0104	0.0103
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.0100	0.00952	0.00959

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L7/E3/R1	L7/E3/R2	L7/E3/R3
Covance LIMS #	90200932	90200958	90200943
Proximate (%)			
Moisture (on a fresh weight basis)	10.4	10.8	10.4
Protein	10.4	10.6	10.7
Total Fat	4.58	4.50	4.46
Ash	1.34	1.30	1.43
Carbohydrates	83.7	83.6	83.4
Acid Detergent Fiber (%)	2.30	2.80	2.58
Neutral Detergent Fiber (%)	8.18	8.32	9.25
Total Dietary Fiber (%)	11.0	10.9	11.5
Starch (%)	71.5	77.5	67.5
Beta Carotene (mg/100g)	0.181	0.167	0.171
Trypsin Inhibitor (TIU/mg)*	2.60	3.68	3.73
Phytic Acid (%)	0.945	0.855	0.949
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1750	1650	1640
p-Coumaric Acid (ppm)	160	141	147
Raffinose (%)	0.147	0.161	0.15
Folic Acid (mg/100g)	0.0353	0.0300	0.0296
Total Inositol (µg/g)	2090	2470	2370
Thiamine Hydrochloride (mg/100g)	0.446	0.437	0.480
Riboflavin/Vitamin B2 (mg/100g)	0.156	0.173	0.160
Niacin/Vitamin B3 (mg/100g)	3.76	3.63	2.90
Pyridoxine HCl (mg/100g)	0.789	0.753	0.766
Vitamin E (mg/100g)	1.05	1.09	1.02
Selenium (ppb)	71.7	< LOQ	72.8

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L7/E3/R1	L7/E3/R2	L7/E3/R3
Covance LIMS #	90200932	90200958	90200943
Minerals (ppm)			
Calcium	47.7	42.3	47.4
Copper	1.38	1.37	1.61
Iron	23.5	24.1	23.8
Magnesium	1280	1220	1290
Manganese	5.69	5.84	5.97
Phosphorus	3260	3230	3310
Potassium	3680	3810	3840
Sodium	< LOQ	< LOQ	< LOQ
Zinc	23.0	24.3	22.4
Amino Acids (mg/g)			
Aspartic Acid	6.53	6.80	6.82
Threonine	3.62	3.70	3.68
Serine	4.89	5.11	4.81
Glutamic Acid	18.5	19.8	19.6
Proline	8.79	9.24	9.04
Glycine	3.82	3.99	4.01
Alanine	7.52	8.00	7.90
Cystine	2.34	2.33	2.30
Valine	4.59	5.01	5.03
Methionine	2.41	2.41	2.30
Isoleucine	3.47	3.79	3.83
Leucine	12.3	13.3	13.1
Tyrosine	3.21	3.57	3.37
Phenylalanine	5.07	5.34	5.37
Lysine	3.00	3.07	3.11
Histidine	2.81	2.96	2.97
Arginine	4.88	5.15	4.91
Tryptophan	0.549	0.566	0.504

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L7/E3/R1	L7/E3/R2	L7/E3/R3
Covance LIMS #	90200932	90200958	90200943
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.577	0.669	0.644
16:1 Palmitoleic	< LOQ	0.00565	0.00579
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0801	0.0865	0.0824
18:1 Oleic	1.05	1.13	1.11
18:2 Linoleic	2.13	2.32	2.28
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0568	0.0651	0.0641
20:0 Arachidic	0.0172	0.0185	0.0176
20:1 Eicosenoic	0.0103	0.0109	0.0108
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.0103	0.0107	0.00943

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L8/E1/R1	L8/E1/R2	L8/E1/R3
Covance LIMS #	90200973	90200929	90200944
Proximate (%)			
Moisture (on a fresh weight basis)	9.67	10.0	9.55
Protein	10.8	11.1	10.8
Total Fat	4.77	4.68	4.58
Ash	1.53	1.48	1.50
Carbohydrates	82.9	82.7	83.1
Acid Detergent Fiber (%)	2.83	2.44	2.75
Neutral Detergent Fiber (%)	8.98	7.68	9.04
Total Dietary Fiber (%)	12.0	11.1	11.9
Starch (%)	67.2	73.7	68.1
Beta Carotene (mg/100g)	0.155	0.170	0.154
Trypsin Inhibitor (TIU/mg)*	3.58	2.76	3.88
Phytic Acid (%)	0.966	0.917	1.01
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	2190	1840	1870
p-Coumaric Acid (ppm)	219	168	171
Raffinose (%)	0.124	0.127	0.115
Folic Acid (mg/100g)	0.0327	0.0398	0.0406
Total Inositol (µg/g)	2590	2330	2380
Thiamine Hydrochloride (mg/100g)	0.399	0.422	0.409
Riboflavin/Vitamin B2 (mg/100g)	0.183	0.183	0.243
Niacin/Vitamin B3 (mg/100g)	2.67	3.07	2.58
Pyridoxine HCl (mg/100g)	0.727	0.731	0.711
Vitamin E (mg/100g)	1.03	1.02	1.10
Selenium (ppb)	< LOQ	< LOQ	61.4

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L8/E1/R1	L8/E1/R2	L8/E1/R3
Covance LIMS #	90200973	90200929	90200944
Minerals (ppm)			
Calcium	41.5	41.0	39.9
Copper	1.09	1.51	1.43
Iron	21.3	22.0	22.9
Magnesium	1380	1390	1430
Manganese	5.06	5.12	5.56
Phosphorus	3390	3420	3520
Potassium	3940	3890	4010
Sodium	< LOQ	< LOQ	< LOQ
Zinc	22.7	23.6	24.2
Amino Acids (mg/g)			
Aspartic Acid	6.87	6.81	7.41
Threonine	3.79	3.86	4.02
Serine	5.21	5.30	5.38
Glutamic Acid	20.0	20.4	22.4
Proline	8.61	9.74	10.3
Glycine	3.99	3.91	4.16
Alanine	7.99	8.19	8.90
Cystine	2.37	2.39	2.42
Valine	5.01	4.90	5.57
Methionine	2.26	2.36	2.33
Isoleucine	3.81	3.79	4.34
Leucine	13.3	13.7	15.1
Tyrosine	3.66	3.42	3.35
Phenylalanine	5.36	5.56	6.11
Lysine	3.18	3.00	3.18
Histidine	2.99	2.94	3.18
Arginine	5.13	4.81	4.91
Tryptophan	0.656	0.553	0.509

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L8/E1/R1	L8/E1/R2	L8/E1/R3
Covance LIMS #	90200973	90200929	90200944
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.651	0.664	0.693
16:1 Palmitoleic	0.00578	< LOQ	0.00582
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0728	0.0739	0.0716
18:1 Oleic	1.08	1.06	1.04
18:2 Linoleic	2.32	2.32	2.40
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0676	0.0661	0.0685
20:0 Arachidic	0.0164	0.0163	0.0158
20:1 Eicosenoic	0.0108	0.0110	0.0106
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00877	0.0102	0.00923

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L8/E2/R1	L8/E2/R2	L8/E2/R3
Covance LIMS #	90200936	90200940	90200939
Proximate (%)			
Moisture (on a fresh weight basis)	9.43	10.2	9.30
Protein	11.2	11.6	11.0
Total Fat	4.84	4.53	4.60
Ash	1.51	1.41	1.48
Carbohydrates	82.5	82.5	82.9
Acid Detergent Fiber (%)	2.48	2.90	3.48
Neutral Detergent Fiber (%)	8.76	9.20	9.02
Total Dietary Fiber (%)	11.6	11.1	11.4
Starch (%)	73.8	72.7	72.3
Beta Carotene (mg/100g)	0.182	0.216	0.186
Trypsin Inhibitor (TIU/mg)*	3.75	2.22	3.08
Phytic Acid (%)	1.02	0.938	0.954
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1920	1900	1890
p-Coumaric Acid (ppm)	171	178	175
Raffinose (%)	0.13	0.119	0.119
Folic Acid (mg/100g)	0.0367	0.0370	0.0366
Total Inositol (µg/g)	3060	2550	2570
Thiamine Hydrochloride (mg/100g)	0.431	0.445	0.419
Riboflavin/Vitamin B2 (mg/100g)	0.201	0.171	0.201
Niacin/Vitamin B3 (mg/100g)	3.70	2.51	3.31
Pyridoxine HCl (mg/100g)	0.771	0.780	0.751
Vitamin E (mg/100g)	1.06	1.00	0.870
Selenium (ppb)	< LOQ	< LOQ	62.2

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L8/E2/R1	L8/E2/R2	L8/E2/R3
Covance LIMS #	90200936	90200940	90200939
Minerals (ppm)			
Calcium	43.4	41.6	43.7
Copper	1.35	2.16	2.90*
Iron	20.3	21.9	20.9
Magnesium	1400	1450	1400
Manganese	4.43	4.73	5.04
Phosphorus	3540	3540	3480
Potassium	4050	3880	4060
Sodium	< LOQ	< LOQ	< LOQ
Zinc	22.0	25.2	25.5
* Confirmed by duplicate retest; average of three results reported.			
Amino Acids (mg/g)			
Aspartic Acid	7.03	7.28	6.97
Threonine	3.82	4.01	3.81
Serine	5.06	5.45	5.06
Glutamic Acid	21.3	22.6	20.7
Proline	9.78	10.2	9.68
Glycine	4.07	4.11	4.05
Alanine	8.51	8.98	8.28
Cystine	2.35	2.39	2.33
Valine	5.39	5.51	5.25
Methionine	2.27	2.41	2.28
Isoleucine	4.21	4.37	4.05
Leucine	14.2	15.4	13.9
Tyrosine	1.67	3.82	3.74
Phenylalanine	5.81	6.17	5.67
Lysine	3.19	3.11	3.14
Histidine	3.16	3.20	3.04
Arginine	4.32	5.06	5.03
Tryptophan	0.445	0.457	0.461

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L8/E2/R1	L8/E2/R2	L8/E2/R3
Covance LIMS #	90200936	90200940	90200939
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.648	0.622	0.628
16:1 Palmitoleic	0.00554	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0797	0.0739	0.0754
18:1 Oleic	1.16	1.04	1.09
18:2 Linoleic	2.46	2.24	2.27
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0625	0.0618	0.0595
20:0 Arachidic	0.0168	0.0154	0.0158
20:1 Eicosenoic	0.0110	0.00996	0.0103
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00958	0.00912	0.00924

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L8/E3/R1	L8/E3/R2	L8/E3/R3
Covance LIMS #	90200927	90200967	90200942
Proximate (%)			
Moisture (on a fresh weight basis)	9.81	9.71	10.3
Protein	11.3	11.7	12.0
Total Fat	4.49	4.73	4.65
Ash	1.36	1.43	1.59
Carbohydrates	82.8	82.1	81.7
Acid Detergent Fiber (%)	2.65	2.85	2.73
Neutral Detergent Fiber (%)	9.04	9.20	8.38
Total Dietary Fiber (%)	11.4	12.4	10.9
Starch (%)	77.9	66.5	71.2
Beta Carotene (mg/100g)	0.196	0.169	0.210
Trypsin Inhibitor (TIU/mg)*	4.29	3.37	2.69
Phytic Acid (%)	0.975	0.971	0.980
Furfural (ppm)	< LOQ	< LOQ	< LOQ
Ferulic Acid (ppm)	1840	2100	1830
p-Coumaric Acid (ppm)	155	187	162
Raffinose (%)	0.131	0.132	0.115
Folic Acid (mg/100g)	0.0360	0.0356	0.0390
Total Inositol (µg/g)	2520	2500	2740
Thiamine Hydrochloride (mg/100g)	0.444	0.421	0.457
Riboflavin/Vitamin B2 (mg/100g)	0.166	0.192	0.202
Niacin/Vitamin B3 (mg/100g)	2.35	2.53	3.02
Pyridoxine HCl (mg/100g)	0.748	0.693	0.718
Vitamin E (mg/100g)	0.883	0.971	0.936
Selenium (ppb)	< LOQ	< LOQ	55.7

* TIU - Trypsin Inhibitor Units

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L8/E3/R1	L8/E3/R2	L8/E3/R3
Covance LIMS #	90200927	90200967	90200942
Minerals (ppm)			
Calcium	40.3	38.5	39.7
Copper	1.40	1.08	1.81
Iron	21.1	21.9	24.5
Magnesium	1400	1430	1440
Manganese	4.52	4.68	5.27
Phosphorus	3430	3360	3400
Potassium	3880	3770	3810
Sodium	< LOQ	< LOQ	< LOQ
Zinc	23.7	22.4	25.9
Amino Acids (mg/g)			
Aspartic Acid	7.21	7.60	7.64
Threonine	3.94	4.13	4.15
Serine	5.30	5.76	5.54
Glutamic Acid	21.7	22.8	23.3
Proline	10.3	9.72	10.5
Glycine	4.00	4.28	4.30
Alanine	8.70	9.08	9.22
Cystine	2.36	2.48	2.49
Valine	5.31	5.59	5.72
Methionine	2.22	2.34	2.41
Isoleucine	4.18	4.33	4.43
Leucine	14.7	15.4	15.6
Tyrosine	3.77	3.98	3.94
Phenylalanine	5.92	6.05	6.23
Lysine	3.07	3.34	3.30
Histidine	3.06	3.30	3.30
Arginine	4.98	5.33	5.35
Tryptophan	0.578	0.612	0.530

Table 2
Compositional Analyses of
Maize Grain - Dry Weight

Sample Description	L8/E3/R1	L8/E3/R2	L8/E3/R3
Covance LIMS #	90200927	90200967	90200942
Fatty Acids (%)			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	0.624	0.619	0.620
16:1 Palmitoleic	< LOQ	0.00576	0.0056
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	0.0784	0.0750	0.0778
18:1 Oleic	1.10	1.08	1.10
18:2 Linoleic	2.37	2.35	2.37
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	0.0655	0.0677	0.0652
20:0 Arachidic	0.0166	0.0156	0.0159
20:1 Eicosenoic	0.0107	0.0102	0.0105
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.00983	0.00838	0.00949

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L1/E1/R1	L1/E1/R2	L1/E1/R3
Covance LIMS #	90200975	90200935	90200948
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	15.5	15.1	15.9
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.56	1.54	1.50
18:1 Oleic	22.5	22.8	22.0
18:2 Linoleic	58.0	58.1	58.1
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.63	1.55	1.71
20:0 Arachidic	0.386	0.383	0.353
20:1 Eicosenoic	0.251	0.253	0.238
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.192	0.224	0.213

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L1/E2/R1	L1/E2/R2	L1/E2/R3
Covance LIMS #	90200950	90200968	90200978
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	15.1	15.1	15.1
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.62	1.59	1.54
18:1 Oleic	22.9	22.7	22.6
18:2 Linoleic	58.0	58.3	58.4
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.51	1.51	1.51
20:0 Arachidic	0.373	0.378	0.361
20:1 Eicosenoic	0.238	0.240	0.233
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.216	0.200	0.195

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L1/E3/R1	L1/E3/R2	L1/E3/R3
Covance LIMS #	90200933	90200970	90200965
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	14.1	14.6	15.1
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.65	1.55	1.64
18:1 Oleic	23.2	22.9	23.8
18:2 Linoleic	58.6	58.6	57.0
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.57	1.62	1.64
20:0 Arachidic	0.379	0.350	0.364
20:1 Eicosenoic	0.248	0.232	0.238
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.220	0.181	0.197

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L2/E1/R1	L2/E1/R2	L2/E1/R3
Covance LIMS #	90200963	90200937	90200956
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	15.8	15.6	16.0
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.70	1.77	1.84
18:1 Oleic	23.4	23.5	23.6
18:2 Linoleic	56.7	56.6	56.0
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.62	1.70	1.69
20:0 Arachidic	0.389	0.394	0.409
20:1 Eicosenoic	0.243	0.242	0.242
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.208	0.210	0.231

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L2/E2/R1	L2/E2/R2	L2/E2/R3
Covance LIMS #	90200979	90200959	90200947
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	15.2	15.3	15.9
16:1 Palmitoleic	< LOQ	< LOQ	0.450
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.76	1.86	2.17
18:1 Oleic	23.6	24.5	24.8
18:2 Linoleic	57.1	56.0	54.3
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.52	1.54	1.55
20:0 Arachidic	0.383	0.401	0.379
20:1 Eicosenoic	0.232	0.233	0.248
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.194	0.204	0.208

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L2/E3/R1	L2/E3/R2	L2/E3/R3
Covance LIMS #	90200972	90200957	90200960
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	14.8	14.8	14.7
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.72	1.81	1.80
18:1 Oleic	24.0	24.1	24.3
18:2 Linoleic	57.0	56.8	56.8
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.63	1.60	1.58
20:0 Arachidic	0.377	0.380	0.397
20:1 Eicosenoic	0.235	0.235	0.243
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.191	0.212	0.213

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L4/E1/R1	L4/E1/R2	L4/E1/R3
Covance LIMS #	90200961	90200977	90200980
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	15.7	15.6	15.7
16:1 Palmitoleic	0.137	0.136	0.130
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.80	1.71	1.76
18:1 Oleic	25.4	25.0	25.4
18:2 Linoleic	54.5	55.2	54.7
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.58	1.58	1.56
20:0 Arachidic	0.396	0.378	0.398
20:1 Eicosenoic	0.245	0.243	0.247
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.214	0.186	0.201

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L4/E2/R1	L4/E2/R2	L4/E2/R3
Covance LIMS #	90200951	90200954	90200966
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	15.3	15.1	15.1
16:1 Palmitoleic	0.132	0.131	0.132
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.88	1.84	1.85
18:1 Oleic	25.3	25.6	25.7
18:2 Linoleic	55.1	55.0	54.9
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.48	1.45	1.48
20:0 Arachidic	0.389	0.390	0.394
20:1 Eicosenoic	0.238	0.240	0.241
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.214	0.219	0.204

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L4/E3/R1	L4/E3/R2	L4/E3/R3
Covance LIMS #	90200931	90200938	90200934
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	14.6	14.7	14.1
16:1 Palmitoleic	< LOQ	< LOQ	0.133
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.86	1.80	1.91
18:1 Oleic	26.1	26.2	26.6
18:2 Linoleic	55.1	54.9	54.9
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.46	1.46	1.44
20:0 Arachidic	0.405	0.392	0.405
20:1 Eicosenoic	0.251	0.253	0.245
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.234	0.230	0.222

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L6/E1/R1	L6/E1/R2	L6/E1/R3
Covance LIMS #	90200955	90200964	90200930
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	16.0	16.1	15.4
16:1 Palmitoleic	0.132	0.131	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.65	1.72	1.68
18:1 Oleic	24.3	24.7	24.5
18:2 Linoleic	55.5	54.9	56.0
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.62	1.62	1.57
20:0 Arachidic	0.362	0.371	0.370
20:1 Eicosenoic	0.243	0.245	0.249
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.222	0.226	0.237

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L6/E2/R1	L6/E2/R2	L6/E2/R3
Covance LIMS #	90200974	90200962	90200971
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	14.9	15.4	15.0
16:1 Palmitoleic	< LOQ	0.134	0.134
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.73	1.71	1.73
18:1 Oleic	24.8	24.4	24.8
18:2 Linoleic	56.2	56.1	56.0
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.51	1.55	1.57
20:0 Arachidic	0.372	0.370	0.368
20:1 Eicosenoic	0.243	0.239	0.235
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.211	0.203	0.204

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L6/E3/R1	L6/E3/R2	L6/E3/R3
Covance LIMS #	90200949	90200976	90200945
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	14.7	14.6	14.4
16:1 Palmitoleic	0.132	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.71	1.76	1.75
18:1 Oleic	24.9	25.0	24.9
18:2 Linoleic	56.1	56.2	56.6
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.60	1.59	1.60
20:0 Arachidic	0.356	0.373	0.369
20:1 Eicosenoic	0.235	0.236	0.236
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.212	0.201	0.201

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L7/E1/R1	L7/E1/R2	L7/E1/R3
Covance LIMS #	90200969	90200953	90200928
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	15.6	15.6	15.4
16:1 Palmitoleic	< LOQ	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.93	2.04	1.98
18:1 Oleic	26.5	25.7	27.0
18:2 Linoleic	53.5	54.2	53.2
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.57	1.59	1.48
20:0 Arachidic	0.429	0.453	0.440
20:1 Eicosenoic	0.263	0.262	0.265
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.226	0.248	0.252

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L7/E2/R1	L7/E2/R2	L7/E2/R3
Covance LIMS #	90200941	90200952	90200946
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	15.4	15.4	15.3
16:1 Palmitoleic	< LOQ	0.132	0.143
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	2.00	1.97	1.92
18:1 Oleic	26.4	25.9	26.0
18:2 Linoleic	53.8	54.2	54.3
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.46	1.50	1.45
20:0 Arachidic	0.437	0.430	0.414
20:1 Eicosenoic	0.261	0.247	0.251
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.247	0.226	0.233

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L7/E3/R1	L7/E3/R2	L7/E3/R3
Covance LIMS #	90200932	90200958	90200943
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	14.7	15.5	15.2
16:1 Palmitoleic	< LOQ	0.131	0.137
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	2.04	2.00	1.95
18:1 Oleic	26.7	26.2	26.3
18:2 Linoleic	54.2	53.7	54.0
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.44	1.51	1.52
20:0 Arachidic	0.437	0.429	0.417
20:1 Eicosenoic	0.262	0.253	0.256
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.262	0.248	0.223

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L8/E1/R1	L8/E1/R2	L8/E1/R3
Covance LIMS #	90200973	90200929	90200944
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	15.4	15.7	16.1
16:1 Palmitoleic	0.137	< LOQ	0.135
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.72	1.75	1.66
18:1 Oleic	25.5	25.1	24.1
18:2 Linoleic	54.8	55.0	55.6
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.60	1.57	1.59
20:0 Arachidic	0.387	0.386	0.366
20:1 Eicosenoic	0.255	0.261	0.246
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.207	0.242	0.214

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L8/E2/R1	L8/E2/R2	L8/E2/R3
Covance LIMS #	90200936	90200940	90200939
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	14.6	15.3	15.1
16:1 Palmitoleic	0.124	< LOQ	< LOQ
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.79	1.81	1.81
18:1 Oleic	26.0	25.5	26.2
18:2 Linoleic	55.2	55.0	54.6
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.40	1.52	1.43
20:0 Arachidic	0.377	0.378	0.380
20:1 Eicosenoic	0.247	0.245	0.248
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.215	0.224	0.222

Table 3
Maize Grain
% of Total Fatty Acids

Sample Description	L8/E3/R1	L8/E3/R2	L8/E3/R3
Covance LIMS #	90200927	90200967	90200942
Fatty Acids % of Total			
8:0 Caprylic	< LOQ	< LOQ	< LOQ
10:0 Capric	< LOQ	< LOQ	< LOQ
12:0 Lauric	< LOQ	< LOQ	< LOQ
14:0 Myristic	< LOQ	< LOQ	< LOQ
14:1 Myristoleic	< LOQ	< LOQ	< LOQ
15:0 Pentadecanoic	< LOQ	< LOQ	< LOQ
15:1 Pentadecenoic	< LOQ	< LOQ	< LOQ
16:0 Palmitic	14.6	14.6	14.5
16:1 Palmitoleic	< LOQ	0.136	0.131
17:0 Heptadecanoic	< LOQ	< LOQ	< LOQ
17:1 Heptadecenoic	< LOQ	< LOQ	< LOQ
18:0 Stearic	1.83	1.77	1.82
18:1 Oleic	25.7	25.5	25.7
18:2 Linoleic	55.4	55.5	55.4
18:3 Gamma Linolenic	< LOQ	< LOQ	< LOQ
18:3 Linolenic	1.53	1.60	1.53
20:0 Arachidic	0.388	0.369	0.372
20:1 Eicosenoic	0.250	0.241	0.246
20:2 Eicosadienoic	< LOQ	< LOQ	< LOQ
20:4 Arachidonic	< LOQ	< LOQ	< LOQ
20:3 Eicosatrienoic	< LOQ	< LOQ	< LOQ
22:0 Behenic	0.230	0.198	0.222

APPENDIX A
Analytical Method Summaries and Reference Standards

Analytical Method Summaries and Reference Standards**2-Furaldehyde (FURF)**

The ground sample was extracted with 4% trichloroacetic acid and injected directly on a high-performance liquid chromatography system for quantitation of free furfurals by ultraviolet detection. The quantitation limit for this study was calculated out to be 0.500 ppm based on a fresh weight basis.

Reference Standard:

Acros 2-Furaldehyde, 99.7%, Lot Number A0219180

Reference:

Albala-Hurtado S., Veciana-Nogues, M. T., Izquierdo-Pulido, M., and Vidal-Carou, M. C., "Determination of Free and Total Furfural Compounds In Infant Milk Formulas By High-Performance Liquid Chromatography," *Journal of Agricultural and Food Chemistry*, 45:2128-2133, (1997).

Acid Detergent Fiber (ADF)

The sample was washed with acetone to remove fats and pigments. It was then placed in a filter bag and positioned in an Ankom analyzer where it was washed with an acidic boiling detergent solution that dissolved the protein, carbohydrate, and ash. The lignocellulose fraction remaining was determined gravimetrically. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 0.100%.

Reference:

Forage Fiber Analyses, Agriculture Handbook No.379, United States Department of Agriculture, (1970).

Amino Acid Composition (TAA5)

Total aspartic acid (including asparagine)

Total threonine

Total serine

Total glutamic acid (including glutamine)

Total proline

Total glycine

Total alanine

Total valine

Total isoleucine

Total leucine

Total tyrosine

Total phenylalanine

Total histidine

Total lysine

Total arginine
 Total tryptophan
 Sulfur-containing amino acids: Total methionine
 Total cystine (including cysteine)

The sample was assayed by three methods to obtain the full profile. Tryptophan required a base hydrolysis with sodium hydroxide. The sulfur-containing amino acids required an oxidation with performic acid prior to hydrolysis with hydrochloric acid. Analysis of the samples for the remaining amino acids was accomplished through direct acid hydrolysis with hydrochloric acid. Once hydrolyzed, the individual amino acids were then quantitated using an automated amino acid analyzer. The limit of quantitation for each amino assay was 0.100 mg/g calculated on a fresh weight basis.

Reference Standards:

ThermoScientific K18, 2.5 $\mu\text{mol/mL}$ per constituent except cystine (1.25 $\mu\text{mol/mL}$),
 Lot Number JK126327

Sigma, L-Tryptophan, 100%, Lot Number 076K0075

Sigma/BioChemika, L-Cysteic Acid Monohydrate, >99% (used as 100%),
 Lot Number 1305674

Sigma, L-Methionine Sulfone, 100%, Lot Number 047K1321

Reference:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Method 982.30,
 AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

Ash (ASHM)

The sample was placed in an electric furnace at 550°C and ignited to drive off all volatile organic matter. The nonvolatile matter remaining was quantitated gravimetrically and calculated to determine percent ash. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 0.100%.

Reference:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Method 923.03,
 AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

Beta Carotene (BCLC)

The sample was saponified and extracted with hexane. The sample was then injected on a reverse phase high-performance liquid chromatography system with ultraviolet light detection. Quantitation was achieved with a linear regression analysis. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for Beta Carotene was 0.0200 mg/100g.

Reference Standard:

Sigma-Aldrich, Beta Carotene, Type I, 100%,(stock standard concentration determined spectrophotometrically), Lot Number 068K2561

References:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Method 941.15, AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

Quackenbush, F. W., *Journal of Liquid Chromatography*, 10: 643-653, (1987).

Carbohydrates (CHO)

The total carbohydrate level was calculated by difference using the fresh weight-derived data and the following equation:

$$\% \text{ carbohydrates} = 100 \% - (\% \text{ protein} + \% \text{ fat} + \% \text{ moisture} + \% \text{ ash})$$

The limit of quantitation for this study was 0.100% calculated on a fresh weight basis.

Reference:

United States Department of Agriculture, "Energy Value of Foods", *Agriculture Handbook No. 74*, pp. 2-11, (1973).

Fat by Acid Hydrolysis (FAAH)

The sample was hydrolyzed with hydrochloric acid at an elevated temperature. The fat was extracted with ether and hexane. The extract was evaporated on a steambath, re-dissolved in hexane and filtered through a sodium sulfate column. The hexane extract was then evaporated again on a steambath under nitrogen, dried, and weighed. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 0.1%.

Reference:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Methods 922.06 and 954.02, AOAC INTERNATIONAL, Gaithersburg, Maryland, (2005).

Fatty Acids (FAPM)

The lipid was extracted and saponified with 0.5N sodium hydroxide in methanol. The saponification mixture was methylated with 14% boron trifluoride in methanol. The resulting methyl esters were extracted with heptane containing an internal standard. The methyl esters of the fatty acids were analyzed by gas chromatography using external standards for quantitation. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation was 0.00500%.

Reference Standards:

Nu Chek Prep GLC Reference Standard Hazelton No. 1, Lot Number AU18-S
Nu Chek Prep GLC Reference Standard Hazelton No. 2, Lot Number M13-O
Nu Chek Prep GLC Reference Standard Hazelton No. 3, Lot Number MA18-S
Nu Chek Prep GLC Reference Standard Hazelton No. 4, Lot Number JA16-T
Nu Chek Prep Methyl Gamma Linolenate, used as 100%
Lot Number U-63M-JY12-R
Nu Chek Prep Methyl Tridecanoate, used as 100%, Lot Number N-13M-JA16-T

References:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Method 983.23, AOAC INTERNATIONAL, Gaithersburg, Maryland, (2005).

Official Methods and Recommended Practices of the AOCS, 5th Ed., Methods Ce 2-66 (1997) and Ce 1e-92 (2001), American Oil Chemists' Society: Champaign, Illinois.

Folic acid (FOAN)

The sample was hydrolyzed in a potassium phosphate buffer with the addition of ascorbic acid to protect the folic acid during autoclaving. Following hydrolysis by autoclaving, the sample was treated with a chicken-pancreas enzyme and incubated approximately 18 hours to liberate the bound folic acid. The amount of folic acid was determined by comparing the growth response of the sample, using the bacteria *Lactobacillus casei*, with the growth response of a folic acid standard. This response was measured turbidimetrically. The limit of quantitation was calculated out to 0.00600 mg/100g on a fresh weight basis.

Reference Standard:

USP, Folic acid, 98.9%, Lot Number Q0G151

References:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Methods 960.46 and 992.05, AOAC INTERNATIONAL, Gaithersburg, Maryland, (2005).

Methods of Analysis for Infant Formulas, Infant Formula Council, Atlanta, Georgia, Section C-2, (1985).

ICP Emission Spectrometry (ICPS)

The sample was dried, precharred, and ashed overnight in a muffle set to maintain 500°C. The ashed sample was re-ashed with nitric acid, treated with hydrochloric acid, taken to dryness, and put into a solution of 5% hydrochloric acid. The amount of each element was determined at appropriate wavelengths by comparing the emission of the unknown sample, measured on the inductively coupled plasma spectrometer, with the emission of the standard solutions. The Limits of quantitation were calculated on a fresh weight basis.

Inorganic Ventures Reference Standards and Limits of Quantitation:

Mineral Lot	Numbers	Calibration	LOQ	(ppm)
		Standard Concentration (µg/ml)		
Calcium	B2-MEB280039, B2-MEB266040	200, 1000		20.0
Copper	B2-MEB280039, B2-MEB280036	2, 10		0.50
Iron	B2-MEB280039, B2-MEB280035	10, 50		2.00
Magnesium	B2-MEB280039, B2-MEB280036	50, 250		20.0
Manganese	B2-MEB280039, B2-MEB280036	2, 10		0.30
Phosphorus	B2-MEB280039, B2-MEB266040	200, 1000		20.0
Potassium	B2-MEB280039, B2-MEB266040	200, 1000		100
Sodium	B2-MEB280039, B2-MEB266040	200, 1000		100
Zinc	B2-MEB280039, B2-MEB280036	10, 50		0.40

References:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Methods 984.27 and 985.01, AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

ICP-Mass Spectrometry (MS1)

The sample was wet-ashed with nitric acid using microwave digestion. Using inductively coupled plasma mass spectrometry, the amount of each element was determined by comparing the counts generated by the unknowns to those generated by standard solutions of known concentrations. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 50.0 ppb.

Reference Standard:

SPEX, Selenium, 100 mg/L, Lot Number 6-74GS

References:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Method 993.14, AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

Inositol (INOS)

The inositol sample was extracted with dilute hydrochloric acid at a high temperature. The amount of inositol was determined by comparing the growth response of the sample, using the yeast *Saccharomyces carlsbergensis*, with the growth response of an inositol standard. The response was measured turbidimetrically. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 40.0 µg/g.

Reference Standard:

Sigma-Aldrich, Myo-Inositol, 100%, Lot Number 065K0018

References:

Methods of Analysis for Infant Formulas, Infant Formula Council, Atlanta, Georgia, Section C-7, (1985).

Atkins, L., Schultz, A. S., Williams, W. L., and Frey, C. N., "Yeast Microbiological Methods for Determination of Vitamins," *Industrial and Engineering Chemistry, Analytical Edition*, 15:141-144, (1943).

Moisture (M100)

The sample was dried in a vacuum oven at approximately 100°C to a constant weight. The moisture weight loss was determined and converted to percent moisture. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 0.100%.

Reference:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Methods 926.08 and 925.09, AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

Neutral Detergent Fiber, Enzyme Method (NDFE)

The sample was washed with acetone to remove fats and pigments. It was then placed in a filter bag and positioned in an Ankom analyzer where it was washed with a neutral boiling detergent solution that dissolved the protein, carbohydrate, enzyme, and ash. The remaining hemicellulose, cellulose, and lignin fractions were determined gravimetrically. The limit of quantitation for this study was 0.100%.

References:

Approved Methods of the American Association of Cereal Chemists, 9th Ed., Method 32.20, (1998).

Forage Fiber Analyses, Agriculture Handbook No.379, United States Department of Agriculture, (1970).

Niacin (NIAP)

The sample was hydrolyzed with sulfuric acid and the pH was adjusted to remove interferences. The amount of niacin was determined by comparing the growth response of the sample, using the bacteria *Lactobacillus plantarum*, with the growth response of a niacin standard. This response was measured turbidimetrically. The limit of quantitation for this study was 0.0300 mg/100g.

Reference Standard:
USP, Niacin, 99.8%, Lot Number IOE295

Reference:
Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Method 944.13,
AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

p-Coumaric Acid and Ferulic Acid (ACID)

The sample was extracted with methanol using ultrasonication, hydrolyzed using 4N sodium hydroxide, buffered using acetic acid/sodium hydroxide, acidified with 3N hydrochloric acid, and filtered. The levels of p-coumaric and ferulic acids in the extract were determined by reverse phase high-performance liquid chromatography with ultraviolet detection. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for the p-coumaric acid and ferulic acid was 50.0 ppm.

Reference Standards:
Acros Organics, 4-Hydroxy-3-methoxycinnamic acid (ferulic acid), 99.4%,
Lot Number A0248008
Acros Organics, p-Hydroxycinnamic acid (p-Coumaric Acid), 99.4%,
Lot Number A0236839

Reference:
Hagerman, A. E. and Nicholson, R. L., "High-Performance Liquid Chromatographic Determination of Hydroxycinnamic Acids in Maize Mesocotyl," *Journal of Agricultural and Food Chemistry*, 30 (No. 6):1098-1102, (1982).

Phytic Acid (PHYT)

The sample was extracted using 0.5M HCl with ultrasonication. Purification and concentration were accomplished on a silica-based anion-exchange column. The sample was analyzed on a polymer high-performance liquid chromatography column PRP-1, 5µm (150 x 4.1mm) with a refractive index detector. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was approximately 0.100%.

Reference Standard:
Aldrich, Phytic Acid, Dodecasodium Salt Hydrate, 95%, Lot Number 077K0693

References:
Lehrfeld, Jacob, "HPLC Separation and Quantitation of Phytic Acid and Some Inositol Phosphates in Foods: Problem and Solutions," *Journal of Agricultural and Food Chemistry*, 42:2726-2731, (1994).

Lehrfeld, Jacob, "High-Performance Liquid Chromatography Analysis of Phytic Acid on a pH-Stable, Macroporous Polymer Column," *Cereal Chemistry*, 66(6):510-515, (1989).

Protein (PGEN)

Nitrogenous compounds in the sample were reduced in the presence of boiling sulfuric acid and a mercury catalyst mixture to form ammonia. The acid digest was made alkaline. The ammonia was distilled and then titrated with a previously standardized acid. The percent nitrogen was calculated and converted to protein using the factor 6.25. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 0.100%.

References:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Methods 955.04 and 979.09, AOAC INTERNATIONAL, Gaithersburg, Maryland, (2005).

Bradstreet, R. B., *The Kjeldahl Method for Organic Nitrogen*, Academic Press: New York, New York, (1965).

Kalhoff, I. M., and Sandell, E. B., *Quantitative Inorganic Analysis*, MacMillan: New York, (1948).

Pyridoxine Hydrochloride (B6A)

The sample was hydrolyzed with dilute sulfuric acid in the autoclave and the pH was adjusted to remove interferences. The amount of pyridoxine was determined by comparing the growth response of the sample, using the yeast *Saccharomyces carlsbergensis*, with the growth response of a pyridoxine standard. The response was measured turbidimetrically. The limit of quantitation was calculated and reported on a fresh weight basis. Results were reported as pyridoxine hydrochloride. The limit of quantitation for this study was 0.00700 mg/100g.

Reference Standard:

USP, Pyridoxine hydrochloride, 99.8%, Lot Number: Q0G409

References:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Method 961.15, AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

Atkins, L., Schultz, A. S., Williams, W. L., and Frey, C. N., "Yeast Microbiological Methods for Determination of Vitamins," *Industrial and Engineering Chemistry, Analytical Edition*, 15:141-144, (1943).

Raffinose (SUGT)

The sample was extracted with deionized water and the extract treated with a hydroxylamine hydrochloride solution in pyridine, containing phenyl- β -D-glucoside as an internal standard. The resulting oximes were converted to silyl derivatives by treatment with hexamethyldisilazane and trifluoroacetic acid and analyzed by gas chromatography using a flame ionization detector. The limit of quantitation was calculated and reported on a fresh weight basis. The acceptable limit of quantitation range for this study was 0.100%.

Reference Standards:

Sigma, D(+)-Raffinose Pentahydrate, 99% (84.0% after correction for degree of hydration), Lot Number 037K1059

References:

Brobst, K. M., "Gas-Liquid Chromatography of Trimethylsilyl Derivatives," *Methods in Carbohydrate Chemistry*, Volume 6, Academic Press: New York, New York, (1972).

Mason, B. S., and Slover, H. T., "A Gas Chromatographic Method for the Determination of Sugars in Foods," *Journal of Agricultural and Food Chemistry*, 19(3):551-554, (1971).

Starch (STCH)

The sample was extracted with alcohol to remove carbohydrates other than starch, i.e. sugars. Then it was hydrolyzed into glucose with alpha-amylase and amyloglucosidase. Glucose was oxidized with glucose oxidase to form peroxide, which reacted with a dye in the presence of peroxidase to give a stable colored product proportional to glucose concentration. The glucose concentration was quantitated by measurement on a spectrophotometer at 540 nm. Percent starch was then calculated from the glucose concentration. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 0.05%

Reference Standard:

Sigma D(+)-Glucose, 99.9%, Lot Number: 123K0095

Reference:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Method 996.11, AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

Thiamine Hydrochloride (BIDE)

The sample was autoclaved under weak acid conditions to extract the thiamine. The resulting solution was incubated with a buffered enzyme solution to release any bound thiamine. The solution was purified on a cation-exchange column. An aliquot was reacted with potassium ferricyanide to convert thiamine to thiochrome. The thiochrome was extracted into isobutyl alcohol, measured on a fluorometer, and quantitated by comparison to a known standard. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 0.01 mg/100g. Results were reported as thiamine hydrochloride.

Reference Standard:

USP, Thiamine Hydrochloride, Purity 99.8% (used as 95.9% after correction for moisture content), Lot Number 01F236

Reference:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Methods 942.23, 953.17, and 957.17, AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

Total Dietary Fiber (TDF)

Duplicate samples were gelatinized with α -amylase and digested with enzymes to break down starch and protein. Ethanol was added to each sample to precipitate the soluble fiber. The samples were filtered, and the residue was rinsed with ethanol and acetone to remove starch and protein degradation products and moisture. Protein content was determined for one of the duplicates; ash content was determined for the other. The total dietary fiber in the sample was calculated using the protein and ash values. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 1.00%.

Reference:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Method 985.29, AOAC INTERNATIONAL: Gaithersburg, Maryland, (2005).

Trypsin Inhibitor (TRIP)

The sample was ground and defatted with petroleum ether. A sample of matrix was extracted with 0.01N sodium hydroxide. Varying aliquots of the sample suspension were exposed to a known amount of trypsin and benzoyl-DL-arginine-p-nitroanilide hydrochloride. The sample was allowed to react for 10 minutes at 37°C. After 10 minutes, the reaction was halted by the addition of acetic acid. The solution was centrifuged, then the absorbance was determined at 410 nm. Trypsin inhibitor activity was determined by photometrically measuring the inhibition of trypsin's reaction with benzoyl-DL-arginine-p-nitroanilide hydrochloride. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 1.00 Trypsin Inhibitor Units (TIU)/mg.

Reference:

Official Methods and Recommended Practices of the American Oil Chemists' Society, 5th Ed., Method Ba 12-75, American Oil Chemists' Society: Champaign, Illinois, (1997).

Vitamin B₂ (Riboflavin) (B2FV)

The sample was hydrolyzed with dilute hydrochloric acid and the pH was adjusted to remove interferences. The amount of riboflavin was determined by comparing the growth response of the sample, using the bacteria *Lactobacillus casei*, with the growth response of multipoint riboflavin standards. The growth response was measured turbidimetrically. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 0.0200 mg/100g.

Reference Standard:

USP, Riboflavin, 100%, Lot Number: N0C021

References:

Official Methods of Analysis of AOAC INTERNATIONAL, 18th Ed., Methods 940.33 and 960.46, AOAC INTERNATIONAL, Gaithersburg, Maryland, (2005).

The United States Pharmacopeia, Twenty-Ninth Revision, p. 1913, United States Pharmacopeial Convention, Inc.: Rockville, Maryland, (2005).

Vitamin E (LCAT)

The sample was saponified to break down any fat and release vitamin E. The saponified mixture was extracted with ethyl ether and then quantitated by high-performance liquid chromatography using a silica column. The limit of quantitation was calculated and reported on a fresh weight basis. The limit of quantitation for this study was 0.500 mg/100g.

Reference Standard:

USP, Alpha Tocopherol, 100%, Lot Number M

References:

Speck, A. J., Schijver, J., and Schreurs, W. H. P., "Vitamin E Composition of Some Seed Oils as Determined by High-Performance Liquid Chromatography with Fluorometric Quantitation," *Journal of Food Science*, 50(1):121-124, (1985).

Cort, W. M., Vincente, T. S., Waysek, E. H., and Williams, B. D., "Vitamin E Content of Feedstuffs Determined by High-Performance Liquid Chromatographic Fluorescence," *Journal of Agricultural and Food Chemistry*, 31:1330-1333, (1983).

McMurray, C. H., Blanchflower, W. J., and Rice, D. A., "Influence of Extraction Techniques on Determination of alpha-Tocopherol in Animal Feedstuffs," *Journal of the Association of Official Analytical Chemists*, 63(6):1258-1261, (1980).