



**AAFCO**  
Proficiency Testing Program



**Animal Feed Scheme**  
**Alfalfa Pellets**  
**Test Material Code # 201925**

**Method Summary Report**  
(Precision Report Follows)

**# Labs Reporting: 190**  
**# Methods Reported: 345**  
**Issue Date : 06/30/2019**

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO PT ffp - Robust sd	Uncertainty (U) - Robust	% RSD - Robust	Average Range (R-bar)	Horwitz %RSD
000.02	Urea, As protein, Colorimetric (%)	1	1	0.6000							
001.00	Loss on Drying, Vac 95°C 5 hr (%)	4	3	7.699	0.1993	7.699	0.1993	0.1151	2.59%	0.0363	2.94%
001.03	Loss on Drying, Low temp. methods (%)	6	6	8.028	0.2158	8.028	0.2447	0.1249	3.05%	0.0589	2.92%
001.05	Loss on Drying, LECO (%)	2	2	7.775	0.1980						
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	51	50	7.764	0.3566	7.771	0.3029	0.0536	3.90%	0.1110	2.94%
001.99	Loss on Drying, Miscellaneous (%)	22	22	7.783	0.4143	7.805	0.2530	0.0674	3.24%	0.1107	2.94%
002.01	Protein, Crude, Auto Kjel-Foss (%)	17	17	17.16	0.3202	17.19	0.2836	0.0860	1.65%	0.2736	2.41%
002.02	Protein, Crude, Semiauto Autoanalyzer (%)	3	3	17.34	0.4758	17.34	0.4758	0.2747	2.74%	0.1737	2.40%
002.03	Protein, Crude, Hach Method (%)	2	2	16.28	1.152						
002.04	Protein, Crude, Copper Catalyst (%)	5	4	17.79	0.4421	17.79	0.4421	0.2210	2.48%	0.0575	2.37%
002.05	Protein, Crude, Copper, Boric Acid (%)	35	34	17.38	0.3283	17.35	0.2460	0.0527	1.42%	0.1208	2.40%
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	119	116	17.84	0.7696	17.78	0.3960	0.0460	2.23%	0.2066	2.37%
002.08	Protein, Crude, Cu/Ti (%)	1	1	17.40							
002.11	Protein, Crude, NIR (%)	6	6	19.03	1.386	19.03	1.572	0.8022	8.26%	0.4125	2.29%
002.99	Protein, Crude, Miscellaneous (%)	1	1	17.37							
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	12	12	1.302	0.3781	1.284	0.3868	0.1396	30.12%	0.0951	3.85%
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	1	1	1.280							
003.06	Fat, Crude, Pet Ether (%)	16	16	1.256	0.3321	1.250	0.3629	0.1134	29.03%	0.0593	3.87%
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	13	13	1.357	0.1611	1.356	0.1817	0.0630	13.40%	0.0908	3.82%
003.10	Fat, Crude, Randall, Pet Ether (%)	31	30	0.9319	0.2754	0.9170	0.2211	0.0505	24.12%	0.0859	4.05%
003.11	Fat, Crude, NIR (%)	5	3	1.365	0.0656	1.365	0.0656	0.0379	4.80%	0.0100	3.82%
003.12	Fat, Crude, Hexane Ext (%)	5	4	1.178	0.1189	1.178	0.1189	0.0595	10.10%	0.0159	3.90%
003.13	Fat, Crude, Randall, Hexane Ext. (%)	7	7	1.334	0.2530	1.316	0.2430	0.1148	18.47%	0.0571	3.84%
003.14	Fat, Crude, Ankom (%)	52	51	1.415	0.3854	1.371	0.2957	0.0518	21.57%	0.0973	3.81%
003.99	Fat, Crude, Miscellaneous (%)	4	3	1.573	0.1427	1.573	0.1427	0.1009	9.07%	0.0933	3.74%
004.00	Fiber, Crude, Asbestos Free (%)	17	17	29.62	1.410	29.51	1.317	0.3992	4.46%	0.4889	1.84%
004.01	Fiber, Crude, Sing Filt (%)	1	1	25.88							
004.03	Fiber, Crude, Fritted Glass (%)	6	6	29.03	1.276	29.03	1.447	0.7385	4.98%	0.4417	1.86%
004.06	Fiber, Crude, Fibertec (%)	25	24	29.76	1.245	29.72	1.258	0.3209	4.23%	0.3245	1.83%
004.07	Fiber, Crude, ANKOM (%)	75	73	29.34	2.470	29.49	1.436	0.2101	4.87%	0.6046	1.84%

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004.11	Fiber, Crude, NIR (%)	7	6	27.56	4.970	27.56	5.635	2.876	20.44%	0.1383	1.90%
004.99	Fiber, Crude, Miscellaneous (%)	2	2	28.87	0.9475						
005.00	Ash, 2h @ 600°C (%)	99	98	11.11	0.3241	11.14	0.2342	0.0296	2.10%	0.1277	2.78%
005.02	Ash, LECO (%)	2	2	11.32	0.0813						
005.03	Ash, Microwave furnace (%)	1	1	11.20							
005.05	Ash, 3h @ 550°C (%)	40	40	11.32	0.2972	11.33	0.2498	0.0494	2.20%	0.0934	2.78%
005.11	Ash, NIR (%)	4	3	10.24	2.334	10.24	2.334	1.347	22.80%	0.0467	2.82%
005.99	Ash, Miscellaneous (%)	8	7	11.15	0.2792	11.14	0.3166	0.1496	2.84%	0.1327	2.78%
006.00	Total Sugars, As sucrose (%)	2	2	2.837	1.544						
006.05	Total Sugars, TSI, Lane-Eunon (12th) (%)	1	1	3.300							
006.99	Total Sugars, Miscellaneous (%)	8	7	3.890	3.128	3.396	2.299	1.086	67.68%	0.2343	3.33%
008.02	Fiber, Acid Detergent, Crucible (%)	17	17	37.61	2.254	37.90	1.662	0.5037	4.38%	0.3713	1.62%
008.05	Fiber, Acid Detergent, Acid Detergent-Hach (%)	1	1	40.15							
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	45	44	36.24	3.908	36.60	2.853	0.5377	7.80%	0.5804	1.65%
008.99	Fiber, Acid Detergent, Miscellaneous (%)	4	4	36.43	1.525	36.43	1.525	0.7625	4.19%	0.6900	1.66%
009.04	Fiber, Neutral Detergent, Neutral Det-No ENZ Pretreat (%)	2	2	48.89	3.415						
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	14	13	47.55	2.196	47.51	2.403	0.8330	5.06%	1.538	1.45%
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	46	46	46.62	3.252	46.71	2.704	0.4984	5.79%	0.7080	1.46%
009.99	Fiber, Neutral Detergent, Miscellaneous (%)	3	3	46.04	2.258	46.04	2.258	1.303	4.90%	0.2967	1.47%
010.03	Moisture, Karl-Fischer (%)	2	2	7.608	0.9228						
010.11	Moisture, NIR (%)	4	3	8.372	0.0630	8.372	0.0630	0.0363	0.75%	0.0457	2.90%
010.99	Moisture, Miscellaneous (%)	14	14	7.951	0.8734	7.886	0.6569	0.2194	8.33%	0.0550	2.93%
011.01	Loss on Drying, 135°C 2hr (%)	69	68	8.708	0.4673	8.744	0.4433	0.0672	5.07%	0.1085	2.89%
011.02	Loss on Drying, 130°C for 2 hours (%)	2	2	8.330	0.0990						
011.99	Loss on Drying, High Temp. Methods Miscellaneous (%)	2	2	9.573	1.022						
012.00	Starch, Polarimetric (Ewers) (%)	14	14	2.740	0.5885	2.707	0.4197	0.1402	15.51%	0.1764	3.44%
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	11	10	1.333	0.4191	1.333	0.4753	0.1879	35.65%	0.1218	3.83%
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	5	4	1.583	0.6962	1.583	0.6962	0.3481	43.97%	0.0254	3.73%
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	3	3	1.442	0.1100	1.442	0.1100	0.0635	7.63%	0.1500	3.79%
012.11	Starch, NIR (%)	1	1	3.115							
013.00	Fat, Acid Pretreat, Acid hydrolysis (%)	16	16	2.322	0.5772	2.305	0.6169	0.1928	26.76%	0.2015	3.53%
013.02	Fat, Acid Pretreat, Mojonier, Bak Ext (%)	19	19	2.824	0.5939	2.791	0.5670	0.1626	20.31%	0.1383	3.43%
013.08	Fat, Base Pretreat, Roese-Gottlieb Modified (%)	1	1	1.542							
013.10	Fat, Acid Pretreat, Soxtec-Acid Hydrolysis (%)	8	8	1.864	0.3516	1.867	0.3922	0.1733	21.01%	0.0635	3.64%
013.13	Fat, Acid Pretreat, Ankom- Acid Hydrolysis (%)	4	3	4.562	0.0682	4.562	0.0682	0.0394	1.49%	0.4868	3.18%
015.41	Aluminum, ICP, Dry ash (mg / kg (ppm))	5	5	1,100	55.72	1,100	55.72	24.92	5.07%	24.15	5.58%
015.42	Aluminum, ICP, Open vessel (mg / kg (ppm))	1	1	797.1							
015.43	Aluminum, ICP, Microwave (mg / kg (ppm))	6	6	975.1	163.5	979.5	175.0	89.30	17.86%	25.55	5.67%
015.52	Aluminum, ICP-MS, Open vessel (mg / kg (ppm))	1	1	403.0							
015.53	Aluminum, ICP-MS, Microwave (mg / kg (ppm))	2	2	1,138	45.70						

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017.41	Boron, ICP, Dry ash (mg / kg (ppm))	5	5	37.13	2.110	37.13	2.110	0.9436	5.68%	1.573	9.29%
017.42	Boron, ICP, Open vessel (mg / kg (ppm))	6	6	35.87	4.057	35.36	3.349	1.709	9.47%	1.483	9.35%
017.43	Boron, ICP, Microwave (mg / kg (ppm))	5	5	37.15	1.992	37.15	1.992	0.8906	5.36%	0.5080	9.28%
017.53	Boron, ICP-MS, Microwave (mg / kg (ppm))	2	2	45.32	14.46						
019.00	Calcium, Ox-Mn04 Vol. (%)	14	14	1.238	0.0746	1.235	0.0771	0.0258	6.25%	0.0294	3.87%
019.02	Calcium, Hach Method (%)	2	2	1.220	0.0004						
019.03	Calcium, Semiauto (Autoanalyzer) (%)	1	1	1.307							
019.08	Calcium, EDTA (%)	12	12	1.321	0.1452	1.304	0.1235	0.0446	9.47%	0.0255	3.84%
019.31	Calcium, AAS, Dry ash (%)	23	22	1.268	0.1128	1.266	0.1133	0.0302	8.95%	0.0237	3.86%
019.32	Calcium, AAS, Open vessel (%)	2	2	1.224	0.0697						
019.33	Calcium, AAS, Microwave (%)	3	3	1.392	0.0451	1.392	0.0451	0.0260	3.24%	0.0547	3.81%
019.41	Calcium, ICP, Dry ash (%)	33	33	1.222	0.0740	1.223	0.0730	0.0159	5.97%	0.0286	3.88%
019.42	Calcium, ICP, Open vessel (%)	22	21	1.226	0.0946	1.233	0.0911	0.0249	7.39%	0.0331	3.88%
019.43	Calcium, ICP, Microwave (%)	26	26	1.249	0.1019	1.240	0.0696	0.0171	5.61%	0.0211	3.87%
019.52	Calcium, ICP-MS, Open vessel (%)	3	3	1.326	0.1906	1.326	0.1906	0.1100	14.37%	0.0302	3.83%
019.53	Calcium, ICP-MS, Microwave (%)	5	5	1.202	0.0522	1.202	0.0522	0.0233	4.34%	0.0880	3.89%
019.99	Calcium, Miscellaneous (%)	5	4	1.288	0.0250	1.288	0.0250	0.0125	1.94%	0.0300	3.85%
021.31	Cobalt, AAS, Dry ash (mg / kg (ppm))	1	1	14.00							
021.41	Cobalt, ICP, Dry ash (mg / kg (ppm))	2	2	10.28	0.7141						
021.42	Cobalt, ICP, Open vessel (mg / kg (ppm))	5	5	7.245	2.994	7.245	2.994	1.339	41.33%	0.9814	11.87%
021.43	Cobalt, ICP, Microwave (mg / kg (ppm))	6	6	10.93	1.296	11.06	1.152	0.5876	10.41%	0.2813	11.14%
021.52	Cobalt, ICP-MS, Open vessel (mg / kg (ppm))	2	2	4.118	0.1662						
021.53	Cobalt, ICP-MS, Microwave (mg / kg (ppm))	4	4	8.323	3.075	8.323	3.075	1.538	36.95%	0.8257	11.63%
022.31	Copper, AAS, Dry ash (mg / kg (ppm))	11	10	9.376	2.916	9.913	1.623	0.6416	16.37%	0.2900	11.33%
022.32	Copper, AAS, Open vessel (mg / kg (ppm))	1	1	9.865							
022.33	Copper, AAS, Microwave (mg / kg (ppm))	2	2	10.01	0.1930						
022.41	Copper, ICP, Dry ash (mg / kg (ppm))	25	23	10.69	2.027	10.29	1.301	0.3392	12.65%	0.7393	11.26%
022.42	Copper, ICP, Open vessel (mg / kg (ppm))	20	20	10.30	2.058	9.965	1.087	0.3038	10.91%	0.5298	11.32%
022.43	Copper, ICP, Microwave (mg / kg (ppm))	24	23	9.716	1.130	9.654	0.9912	0.2583	10.27%	0.4834	11.37%
022.44	Copper, ICP, Dry ash (mg / kg (ppm))	1	1	13.52							
022.52	Copper, ICP-MS, Open vessel (mg / kg (ppm))	2	2	9.780	1.103						
022.53	Copper, ICP-MS, Microwave (mg / kg (ppm))	5	4	9.004	0.1485	9.004	0.1485	0.0743	1.65%	0.2575	11.49%
022.99	Copper, Miscellaneous (mg / kg (ppm))	4	4	9.530	1.401	9.530	1.401	0.7007	14.71%	0.5300	11.39%
025.31	Iron, AAS, Dry ash (mg / kg (ppm))	17	17	992.7	115.8	980.3	94.29	28.59	9.62%	15.26	5.67%
025.32	Iron, AAS, Open vessel (mg / kg (ppm))	1	1	1,058							
025.33	Iron, AAS, Microwave (mg / kg (ppm))	1	1	1,003							
025.41	Iron, ICP, Dry ash (mg / kg (ppm))	27	26	962.8	124.0	983.9	45.83	11.24	4.66%	24.28	5.67%
025.42	Iron, ICP, Open vessel (mg / kg (ppm))	18	17	872.4	112.2	872.4	127.3	38.59	14.59%	27.00	5.77%
025.43	Iron, ICP, Microwave (mg / kg (ppm))	19	19	1,016	83.77	1,014	89.93	25.79	8.87%	17.68	5.64%
025.51	Iron, ICP-MS, Dry ash (mg / kg (ppm))	1	1	1,004							

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025.52	Iron, ICP-MS, Open vessel (mg / kg (ppm))	1	1	560.8							
025.53	Iron, ICP-MS, Microwave (mg / kg (ppm))	4	4	902.1	171.5	902.1	171.5	85.75	19.01%	27.57	5.74%
025.99	Iron, Miscellaneous (mg / kg (ppm))	3	3	903.6	64.98	903.6	64.98	37.52	7.19%	36.37	5.74%
027.31	Magnesium, AAS, Dry ash (%)	16	15	0.3335	0.0201	0.3349	0.0192	0.0062	5.73%	0.0045	4.72%
027.32	Magnesium, AAS, Open vessel (%)	2	2	0.3385	0.0050						
027.33	Magnesium, AAS, Microwave (%)	2	2	0.3158	0.0343						
027.41	Magnesium, ICP, Dry ash (%)	28	27	0.3363	0.0283	0.3336	0.0209	0.0050	6.27%	0.0061	4.72%
027.42	Magnesium, ICP, Open vessel (%)	21	20	0.3281	0.0271	0.3285	0.0299	0.0083	9.09%	0.0100	4.73%
027.43	Magnesium, ICP, Microwave (%)	23	23	0.3345	0.0179	0.3346	0.0200	0.0052	5.98%	0.0082	4.72%
027.51	Magnesium, ICP-MS, Dry ash (%)	1	1	0.3300							
027.52	Magnesium, ICP-MS, Open vessel (%)	3	3	0.3320	0.0147	0.3320	0.0147	0.0085	4.44%	0.0279	4.72%
027.53	Magnesium, ICP-MS, Microwave (%)	5	5	0.3309	0.0202	0.3309	0.0202	0.0090	6.09%	0.0086	4.72%
027.99	Magnesium, Miscellaneous (%)	4	4	0.3475	0.0144	0.3475	0.0144	0.0072	4.15%	0.0050	4.69%
028.31	Manganese, AAS, Dry ash (mg / kg (ppm))	12	12	67.47	17.92	71.21	7.617	2.748	10.70%	1.553	8.42%
028.32	Manganese, AAS, Open vessel (mg / kg (ppm))	1	1	76.85							
028.33	Manganese, AAS, Microwave (mg / kg (ppm))	2	2	69.13	5.799						
028.34	Manganese, AAS, Dry ash (mg / kg (ppm))	1	1	67.82							
028.41	Manganese, ICP, Dry ash (mg / kg (ppm))	25	24	70.96	5.404	70.89	3.702	0.9445	5.22%	2.069	8.42%
028.42	Manganese, ICP, Open vessel (mg / kg (ppm))	20	20	71.38	6.529	71.78	6.355	1.776	8.85%	2.304	8.41%
028.43	Manganese, ICP, Microwave (mg / kg (ppm))	23	23	73.70	4.769	73.74	5.219	1.360	7.08%	1.499	8.37%
028.44	Manganese, ICP, Dry ash (mg / kg (ppm))	1	1	65.25							
028.51	Manganese, ICP-MS, Dry ash (mg / kg (ppm))	1	1	53.71							
028.52	Manganese, ICP-MS, Open vessel (mg / kg (ppm))	2	2	79.32	13.18						
028.53	Manganese, ICP-MS, Microwave (mg / kg (ppm))	5	5	72.41	2.124	72.41	2.124	0.9501	2.93%	2.550	8.40%
028.99	Manganese, Miscellaneous (mg / kg (ppm))	4	4	72.40	4.580	72.40	4.580	2.290	6.33%	3.245	8.40%
031.00	Phosphorus, Vol (%)	1	1	0.2250							
031.01	Phosphorus, Photometric (%)	44	41	0.2244	0.0201	0.2236	0.0210	0.0041	9.37%	0.0104	5.01%
031.02	Phosphorus, GQMP (AOAC 935.13-Extraction) (%)	2	2	0.2125	0.0106						
031.03	Phosphorus, Autoanalyzer (%)	3	3	0.2099	0.0106	0.2099	0.0106	0.0075	5.05%	0.0137	5.06%
031.06	Phosphorus, Hach Method (%)	1	1	0.2250							
031.41	Phosphorus, ICP, Dry ash (%)	30	29	0.2151	0.0138	0.2148	0.0132	0.0031	6.14%	0.0054	5.04%
031.42	Phosphorus, ICP, Open vessel (%)	21	20	0.2153	0.0124	0.2156	0.0133	0.0037	6.17%	0.0057	5.04%
031.43	Phosphorus, ICP, Microwave (%)	25	25	0.2254	0.0239	0.2213	0.0151	0.0038	6.82%	0.0065	5.02%
031.44	Phosphorus, ICP, Dry ash (%)	1	1	0.2175							
031.51	Phosphorus, ICP-MS, Dry ash (%)	1	1	0.2065							
031.52	Phosphorus, ICP-MS, Open vessel (%)	2	2	0.1905	0.0530						
031.53	Phosphorus, ICP-MS, Microwave (%)	5	5	0.2096	0.0214	0.2096	0.0214	0.0096	10.20%	0.0140	5.06%
031.99	Phosphorus, Miscellaneous (%)	5	5	0.2210	0.0204	0.2210	0.0204	0.0091	9.24%	0.0060	5.02%
032.31	Potassium, AAS, Dry ash (%)	13	13	2.410	0.1039	2.410	0.1117	0.0387	4.64%	0.0464	3.50%
032.32	Potassium, AAS, Open vessel (%)	2	2	3.721	1.776						

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032.41	Potassium, ICP, Dry ash (%)	30	29	2.338	0.2914	2.375	0.1416	0.0329	5.96%	0.0533	3.51%
032.42	Potassium, ICP, Open vessel (%)	20	20	2.399	0.1403	2.410	0.1336	0.0374	5.55%	0.0524	3.50%
032.43	Potassium, ICP, Microwave (%)	26	26	2.421	0.2536	2.424	0.1903	0.0467	7.85%	0.0356	3.50%
032.51	Potassium, ICP-MS, Dry ash (%)	1	1	2.435							
032.52	Potassium, ICP-MS, Open vessel (%)	2	2	2.273	0.2581						
032.53	Potassium, ICP-MS, Microwave (%)	5	5	2.372	0.1300	2.372	0.1300	0.0582	5.48%	0.1120	3.51%
032.99	Potassium, Miscellaneous (%)	5	5	2.369	0.0460	2.369	0.0460	0.0206	1.94%	0.0340	3.51%
033.00	Salt as chloride, Sol Cl (%)	18	17	0.5220	0.0489	0.5160	0.0333	0.0101	6.46%	0.0212	4.42%
033.01	Salt as chloride, Poten Cl (%)	24	24	0.5447	0.0493	0.5442	0.0273	0.0070	5.02%	0.0084	4.38%
033.03	Salt as chloride, Quantab (%)	3	3	0.5450	0.0087	0.5450	0.0087	0.0061	1.59%	0.0233	4.38%
033.99	Salt, Miscellaneous (%)	7	6	0.3466	0.2484	0.3466	0.2816	0.1437	81.26%	0.0035	4.69%
034.01	Selenium, Fluor (mg / kg (ppm))	1	1	0.7840							
034.04	Selenium, AA, Hydride (mg / kg (ppm))	3	3	0.6555	0.0455	0.6555	0.0455	0.0263	6.94%	0.0300	17.05%
034.41	Selenium, ICP, Dry ash (mg / kg (ppm))	3	3	0.6655	0.0403	0.6655	0.0403	0.0233	6.05%	0.0817	17.01%
034.42	Selenium, ICP, Open vessel (mg / kg (ppm))	1		0.0000							
034.43	Selenium, ICP, Microwave (mg / kg (ppm))	1	1	1.089							
034.52	Selenium, ICP-MS, Open vessel (mg / kg (ppm))	5	5	0.9287	0.1507	0.9287	0.1507	0.0674	16.23%	0.1166	16.18%
034.53	Selenium, ICP-MS, Microwave (mg / kg (ppm))	10	10	0.9120	0.6295	0.8032	0.2260	0.0893	28.14%	0.0351	16.53%
035.05	Sodium, Flame Emission (%)	3	3	0.0450	0.0278	0.0450	0.0278	0.0197	61.87%	0.0100	6.38%
035.31	Sodium, AAS, Dry ash (%)	12	12	0.0489	0.0284	0.0456	0.0232	0.0084	50.96%	0.0063	6.37%
035.32	Sodium, AAS, Open vessel (%)	1	1	0.0400							
035.41	Sodium, ICP, Dry ash (%)	25	23	0.0457	0.0199	0.0429	0.0109	0.0028	25.31%	0.0055	6.42%
035.42	Sodium, ICP, Open vessel (%)	17	16	0.0245	0.0083	0.0239	0.0079	0.0025	32.88%	0.0042	7.02%
035.43	Sodium, ICP, Microwave (%)	19	18	0.0369	0.0389	0.0271	0.0162	0.0048	59.56%	0.0033	6.88%
035.52	Sodium, ICP-MS, Open vessel (%)	2	2	0.0263	0.0104						
035.53	Sodium, ICP-MS, Microwave (%)	5	4	0.0171	0.0004	0.0171	0.0004	0.0002	2.52%	0.0011	7.38%
035.99	Sodium, Miscellaneous (%)	5	4	0.0275	0.0096	0.0275	0.0096			0.0000	6.87%
036.04	Sulfur, LECO (%)	5	5	0.2794	0.0096	0.2794	0.0096	0.0043	3.43%	0.0116	4.85%
036.42	Sulfur, ICP, Open vessel (%)	22	22	0.2636	0.0228	0.2634	0.0218	0.0058	8.28%	0.0085	4.89%
036.43	Sulfur, ICP, Microwave (%)	17	17	0.2946	0.0693	0.2817	0.0297	0.0090	10.53%	0.0137	4.84%
036.52	Sulfur, ICP-MS, Open vessel (%)	2	2	0.2567	0.0010						
036.53	Sulfur, ICP-MS, Microwave (%)	2	2	0.2770	0.0042						
036.99	Sulfur, Miscellaneous (%)	3	3	0.2700	0.0173	0.2700	0.0173	0.0122	6.41%	0.0133	4.87%
037.31	Zinc, AAS, Dry ash (mg / kg (ppm))	14	13	384.0	1,280	29.49	3.839	1.331	13.02%	2.262	9.61%
037.32	Zinc, AAS, Open vessel (mg / kg (ppm))	1	1	29.33							
037.33	Zinc, AAS, Microwave (mg / kg (ppm))	2	2	25.69	6.326						
037.41	Zinc, ICP, Dry ash (mg / kg (ppm))	26	25	30.77	8.681	29.91	5.951	1.488	19.89%	1.700	9.59%
037.42	Zinc, ICP, Open vessel (mg / kg (ppm))	19	19	29.20	4.963	29.05	4.852	1.391	16.70%	1.755	9.63%
037.43	Zinc, ICP, Microwave (mg / kg (ppm))	23	23	27.89	6.509	28.89	3.471	0.9047	12.02%	1.135	9.64%
037.44	Zinc, ICP, Dry ash (mg / kg (ppm))	1	1	24.20							

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037.52	Zinc, ICP-MS, Open vessel (mg / kg (ppm))	2	2	29.40	1.556						
037.53	Zinc, ICP-MS, Microwave (mg / kg (ppm))	5	5	27.57	2.266	27.57	2.266	1.013	8.22%	2.736	9.71%
037.99	Zinc, Miscellaneous (mg / kg (ppm))	4	4	27.98	2.366	27.98	2.366	1.183	8.46%	1.268	9.69%
038.41	Molybdenum, ICP, Dry ash (mg / kg (ppm))	3	3	2.834	0.2637	2.834	0.2637	0.1864	9.30%	0.0847	13.68%
038.42	Molybdenum, ICP, Open vessel (mg / kg (ppm))	5	4	3.219	0.3169	3.219	0.3169	0.1585	9.84%	0.1328	13.42%
038.43	Molybdenum, ICP, Microwave (mg / kg (ppm))	6	5	3.022	0.4637	3.022	0.4637	0.2592	15.34%	0.1075	13.54%
038.52	Molybdenum, ICP-MS, Open vessel (mg / kg (ppm))	2	2	1.945	0.0778						
038.53	Molybdenum, ICP-MS, Microwave (mg / kg (ppm))	4	4	2.910	0.3301	2.910	0.3301	0.1650	11.34%	0.0426	13.62%
040.42	Barium, ICP, Open vessel (mg / kg (ppm))	1	1	57.98							
040.53	Barium, ICP-MS, Microwave (mg / kg (ppm))	2	2	57.43	3.367						
041.53	Vanadium, ICP-MS, Microwave (mg / kg (ppm))	2	2	2.895	0.0212						
042.00	Chloride, Titrimetric (%)	1	1	0.3190							
100.00	Carotene, Spectrophotometer (mg / kg (ppm))	1	1	0.9750							
102.01	Niacin, Microbiological (mg / kg (ppm))	1	1	34.40							
103.01	Pantothenic Acid, Microbiological (mg / kg (ppm))	1	1	19.05							
104.03	Riboflavin, LC (mg / kg (ppm))	1	1	3.285							
105.00	Thiamine, LC (mg / kg (ppm))	1	1	1.235							
106.02	Vitamin A, LC (KU / kg)	3	1								
107.00	Vitamin B12, Microbiological (µg / kg (ppb))	1	1	45.20							
108.02	Vitamin D3, LC (KU / kg)	2	1	33.23							
109.02	Vitamin E, LC (IU / kg)	4	3	13.19	7.618	13.19	7.618	4.398	57.74%	0.4333	
110.00	Xanthophyll, Spectrophotometer (mg / kg (ppm))	1	1	7.600							
113.01	Folic Acid, Micro (mg / kg (ppm))	1	1	1.390							
114.01	Biotin, Microbiological (mg / kg (ppm))	1	1	0.3785							
120.00	Alanine, Post-col Ninhydrin Der (%)	24	24	0.8239	0.0654	0.8233	0.0521	0.0133	6.32%	0.0160	4.12%
120.02	Alanine, Post-col OPA Der (%)	1	1	0.8505							
120.05	Alanine, Pre-col AQC Der (%)	8	8	0.7690	0.0716	0.7791	0.0557	0.0246	7.15%	0.0307	4.15%
120.99	Alanine, Miscellaneous (%)	1	1	0.4696							
121.00	Arginine, Post-col Ninhydrin Der (%)	25	25	0.6694	0.0679	0.6681	0.0386	0.0097	5.78%	0.0177	4.25%
121.02	Arginine, Post-col OPA Der (%)	1	1	0.6240							
121.05	Arginine, Pre-col AQC Der (%)	8	8	0.6214	0.0746	0.6214	0.0846	0.0374	13.62%	0.0336	4.30%
121.99	Arginine, Miscellaneous (%)	1	1	1.306							
122.00	Aspartic, Post-col Ninhydrin Der (%)	24	24	1.815	0.1523	1.817	0.0864	0.0220	4.75%	0.0395	3.66%
122.02	Aspartic, Post-col OPA Der (%)	1	1	1.854							
122.05	Aspartic, Pre-col AQC Der (%)	8	8	1.711	0.1871	1.749	0.1068	0.0472	6.11%	0.0555	3.68%
122.99	Aspartic, Miscellaneous (%)	1	1	1.752							
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin (%)	25	25	0.1946	0.0361	0.1891	0.0279	0.0070	14.73%	0.0082	5.14%
124.02	Cysteine/Cystine, PAO Post-col OPA Der (%)	1	1	0.1945							
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	8	7	0.2038	0.0991	0.2038	0.1124	0.0531	55.14%	0.0028	5.08%
125.00	Glutamic, Post-col Ninhydrin Der (%)	24	24	1.553	0.1724	1.530	0.0673	0.0172	4.40%	0.0312	3.75%

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125.02	Glutamic, Post-col OPA Der (%)	1	1	1.499							
125.05	Glutamic, Pre-col AQC Der (%)	8	7	1.408	0.1241	1.408	0.1401	0.0662	9.95%	0.0446	3.80%
125.99	Glutamic, Miscellaneous (%)	1	1	2.518							
126.00	Glycine, Post-col Ninhydrin Der (%)	24	23	0.7790	0.0445	0.7824	0.0300	0.0078	3.83%	0.0158	4.15%
126.02	Glycine, Post-col OPA Der (%)	1	1	0.7865							
126.05	Glycine, Pre-col AQC Der (%)	8	8	0.7740	0.1158	0.7450	0.0489	0.0216	6.56%	0.0278	4.18%
126.99	Glycine, Miscellaneous (%)	1	1	0.4923							
127.00	Histidine, Post-col Ninhydrin Der (%)	25	24	0.2452	0.0411	0.2411	0.0220	0.0056	9.14%	0.0083	4.95%
127.02	Histidine, Post-col OPA Der (%)	1	1	0.2185							
127.05	Histidine, Pre-col AQC Der (%)	8	7	0.2139	0.0176	0.2139	0.0199	0.0094	9.32%	0.0079	5.04%
127.99	Histidine, Miscellaneous (%)	1	1	0.4923							
128.00	Isoleucine, Post-col Ninhydrin Der (%)	25	25	0.6607	0.0741	0.6606	0.0687	0.0172	10.40%	0.0166	4.26%
128.02	Isoleucine, Post-col OPA Der (%)	1	1	0.6510							
128.05	Isoleucine, Pre-col AQC Der (%)	8	8	0.6375	0.0605	0.6375	0.0686	0.0303	10.76%	0.0362	4.28%
128.99	Isoleucine, Miscellaneous (%)	1	1	0.5180							
129.00	Leucine, Post-col Ninhydrin Der (%)	25	25	1.116	0.0811	1.120	0.0703	0.0176	6.28%	0.0238	3.93%
129.02	Leucine, Post-col OPA Der (%)	1	1	1.118							
129.05	Leucine, Pre-col AQC Der (%)	8	7	1.045	0.0656	1.045	0.0744	0.0351	7.11%	0.0321	3.97%
129.99	Leucine, Miscellaneous (%)	1	1	0.0880							
130.00	L-Lysine, Post-col Ninhydrin Der (%)	26	26	0.7334	0.0857	0.7350	0.0527	0.0129	7.16%	0.0118	4.19%
130.02	L-Lysine, Post-col OPA Der (%)	1	1	0.7330							
130.05	L-Lysine, Pre-col AQC Der (%)	8	7	0.6991	0.0787	0.7079	0.0675	0.0319	9.54%	0.0210	4.21%
130.99	L-Lysine, Miscellaneous (%)	2	2	1.175	0.5947						
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	26	26	0.2243	0.0283	0.2245	0.0190	0.0046	8.45%	0.0079	5.01%
131.02	Methionine, PAO Post-col OPA Der (%)	1	1	0.2225							
131.05	Methionine, PAO Pre-col AQC Der (%)	7	6	0.1852	0.0332	0.1852	0.0377	0.0192	20.35%	0.0085	5.16%
131.99	Methionine, Miscellaneous (%)	1	1	0.0380							
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	25	25	0.7615	0.0770	0.7613	0.0581	0.0145	7.63%	0.0165	4.17%
132.02	Phenylalanine, Post-col OPA Der (%)	1	1	0.7605							
132.05	Phenylalanine, Pre-col AQC Der (%)	8	7	0.6977	0.0383	0.6947	0.0362	0.0171	5.22%	0.0165	4.23%
132.99	Phenylalanine, Miscellaneous (%)	1	1	0.6851							
133.00	Proline, Post-col Ninhydrin Der (%)	24	23	0.9408	0.0568	0.9399	0.0486	0.0127	5.17%	0.0172	4.04%
133.05	Proline, Pre-col AQC Der (%)	8	8	0.9308	0.1151	0.9171	0.0748	0.0330	8.15%	0.0247	4.05%
133.99	Proline, Miscellaneous (%)	1	1	0.7679							
134.00	Serine, Post-col Ninhydrin Der (%)	24	23	0.7200	0.0648	0.7230	0.0543	0.0142	7.51%	0.0174	4.20%
134.02	Serine, Post-col OPA Der (%)	1	1	0.6530							
134.05	Serine, Pre-col AQC Der (%)	8	8	0.7433	0.1756	0.6936	0.0523	0.0231	7.54%	0.0242	4.23%
134.99	Serine, Miscellaneous (%)	1	1	0.9026							
135.00	Threonine, Post-col Ninhydrin Der (%)	26	26	0.6855	0.0573	0.6867	0.0383	0.0094	5.58%	0.0180	4.23%
135.02	Threonine, Post-col OPA Der (%)	1	1	0.6785							

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135.05	Threonine, Pre-col AQC Der (%)	8	8	0.6612	0.0649	0.6547	0.0472	0.0209	7.21%	0.0233	4.26%
135.99	Threonine, Miscellaneous (%)	1	1	0.7796							
136.00	Tryptophan, Alka-Hydrol Post-col Ninhyd (%)	9	9	0.1939	0.0212	0.1901	0.0134	0.0056	7.06%	0.0135	5.14%
136.01	Tryptophan, Alka-Hydrol Rev Phase LC UV (%)	4	4	0.1794	0.0174	0.1794	0.0174	0.0087	9.71%	0.0143	5.18%
136.02	Tryptophan, Alka-Hydrol Post-col OPA De (%)	1	1	0.1735							
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	5	4	0.2036	0.0070	0.2036	0.0070	0.0035	3.42%	0.0031	5.08%
136.05	Tryptophan, Pre-col AQC Der (%)	3	3	0.1175	0.0440	0.1175	0.0440	0.0254	37.43%	0.0051	5.52%
136.99	Tryptophan, Miscellaneous (%)	4	3	0.3197	0.2655	0.3197	0.2655	0.1533	83.07%	0.0106	4.75%
137.00	Tyrosine, Post-col Ninhydrin Der (%)	19	19	0.4448	0.0652	0.4522	0.0368	0.0105	8.13%	0.0176	4.51%
137.02	Tyrosine, Post-col OPA Der (%)	1	1	0.5180							
137.05	Tyrosine, Pre-col AQC Der (%)	8	7	0.4707	0.0372	0.4707	0.0422	0.0199	8.95%	0.0169	4.48%
137.99	Tyrosine, Miscellaneous (%)	1	1	0.6240							
138.00	Valine, Post-col Ninhydrin Der (%)	25	25	0.8501	0.0787	0.8603	0.0569	0.0142	6.62%	0.0199	4.09%
138.02	Valine, Post-col OPA Der (%)	1	1	0.8550							
138.05	Valine, Pre-col AQC Der (%)	8	7	0.8238	0.0509	0.8238	0.0577	0.0273	7.01%	0.0255	4.12%
138.99	Valine, Miscellaneous (%)	1	1	0.6718							
139.00	Taurine, Post-col Ninhydrin Der (%)	2	2	0.0935	0.0587						
139.02	Taurine, Post-col OPA Der (%)	1		0.0100							
139.05	Taurine, Pre-col AQC Der (%)	1	1	0.0020							
160.99	Fructose, Miscellaneous (%)	4	4	0.8473	0.4791	0.8473	0.4791	0.2395	56.55%	0.0320	4.10%
162.99	Glucose, Miscellaneous (%)	4	4	0.3958	0.1503	0.3958	0.1503	0.0751	37.97%	0.0505	4.60%
163.99	Lactose, Miscellaneous (%)	3									
164.99	Maltose, Miscellaneous (%)	2		0.0000							
165.99	Sucrose, Miscellaneous (%)	4	4	0.5351	0.2371	0.5351	0.2371	0.1185	44.30%	0.0238	4.39%
166.99	Raffinose, Miscellaneous (%)	1		0.0500							
167.99	Stachyose, Miscellaneous (%)	1		0.0500							
400.01	Water Activity, Aqualab chilled mirror (Units)	7	7	0.4751	0.0275	0.4717	0.0228	0.0108	4.83%	0.0022	
400.99	Water Activity, Miscellaneous (Units)	3	3	0.4590	0.0111	0.4590	0.0111	0.0079	2.43%	0.0007	
412.01	Starch, Dietary, Enzymatic-Colorimetric (%)	1	1	1.330							
516.00	Arsenic, Total, AA, Hydride (mg / kg (ppm))	2	2	0.4536	0.0348						
516.43	Arsenic, Total, ICP, Microwave (mg / kg (ppm))	1	1	0.8145							
516.52	Arsenic, Total, ICP-MS, Open vessel (mg / kg (ppm))	3	3	0.4867	0.0723	0.4867	0.0723	0.0417	14.85%	0.0220	17.83%
516.53	Arsenic, Total, ICP-MS, Microwave (mg / kg (ppm))	6	6	0.4933	0.1192	0.4936	0.1345	0.0686	27.25%	0.0258	17.79%
518.41	Cadmium, ICP, Dry ash (mg / kg (ppm))	2	2	0.1114	0.0087						
518.43	Cadmium, ICP, Microwave (mg / kg (ppm))	1	1	0.1605							
518.52	Cadmium, ICP-MS, Open vessel (mg / kg (ppm))	3	3	0.1067	0.0059	0.1067	0.0059	0.0034	5.49%	0.0067	22.00%
518.53	Cadmium, ICP-MS, Microwave (mg / kg (ppm))	6	6	0.1088	0.0072	0.1088	0.0082	0.0042	7.51%	0.0070	22.00%
520.41	Chromium, ICP, Dry ash (mg / kg (ppm))	2	2	122.6	148.4						
520.42	Chromium, ICP, Open vessel (mg / kg (ppm))	3	3	20.12	0.9955	20.12	0.9955	0.5748	4.95%	1.287	10.18%
520.43	Chromium, ICP, Microwave (mg / kg (ppm))	2	2	26.05	3.926						



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520.52	Chromium, ICP-MS, Open vessel (mg / kg (ppm))	1	1	7.880							
520.53	Chromium, ICP-MS, Microwave (mg / kg (ppm))	5	5	22.13	8.216	22.13	8.216	3.674	37.13%	1.116	10.04%
526.41	Lead, ICP, Dry ash (mg / kg (ppm))	2	2	4.928	0.4233						
526.43	Lead, ICP, Microwave (mg / kg (ppm))	1	1	5.587							
526.52	Lead, ICP-MS, Open vessel (mg / kg (ppm))	3	3	5.622	0.6936	5.622	0.6936	0.4004	12.34%	0.1633	12.34%
526.53	Lead, ICP-MS, Microwave (mg / kg (ppm))	6	6	6.061	0.2851	6.060	0.3233	0.1650	5.33%	0.9717	12.20%
529.99	Mercury, Miscellaneous (µg / kg (ppb))	2	2	8.199	11.57						
539.41	Nickel, ICP, Dry ash (mg / kg (ppm))	2	2	10.07	0.5908						
539.42	Nickel, ICP, Open vessel (mg / kg (ppm))	1	1	6.030							
539.52	Nickel, ICP-MS, Open vessel (mg / kg (ppm))	1	1	4.465							
539.53	Nickel, ICP-MS, Microwave (mg / kg (ppm))	3	3	9.816	4.207	9.816	4.207			0.6327	11.34%
710.99	Lauric Acid (12:0), Miscellaneous (% (w/w))	2	1	0.0100							
714.99	Myristic Acid (14:0), Miscellaneous (% (w/w))	2	1	0.0095							
716.99	Palmitic Acid (16:0), Miscellaneous (% (w/w))	2	2	0.3375	0.0672						
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (% (w/w))	2	1	0.0330							
722.99	Stearic Acid (18:0), Miscellaneous (% (w/w))	2	2	0.0653	0.0067						
724.99	Oleic Acid (9c-18:1), Miscellaneous (% (w/w))	2	2	0.0728	0.0244						
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (% (w/w))	2	2	0.1583	0.0237						
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (% (w/w))	2	2	0.1623	0.0251						
730.99	Arachidic Acid (20:0), Miscellaneous (% (w/w))	2	1	0.0165							
732.99	Gondoic Acid (11c-20:1), Miscellaneous (% (w/w))	2		0.0050							
740.99	Eicosapentaenoic Acid EPA (5c,8c,11c,14c,17c-20:5), Miscellaneous (% (w/w))	1		0.0050							
742.99	Behenic Acid (22:0), Miscellaneous (% (w/w))	2	2	0.0215	0.0021						
744.99	Erucic Acid (13c-22:1), Miscellaneous (% (w/w))	1		0.0050							
746.99	Docosapentaenoic Acid n-3 DPA (7c,10c,13c,16c,19c-22:5), Miscellaneous (% (w/w))	1		0.0050							
748.99	Lignoceric Acid (24:0), Miscellaneous (% (w/w))	1	1	0.0275							
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (% (w/w))	1		0.0050							
752.99	Nervonic Acid (24:1) isomers, Miscellaneous (% (w/w))	1		0.0050							
754.99	Total n-3 Polyunsaturated (Omega-3) Fatty Acids, Miscellaneous (% (w/w))	1	1	0.1850							
756.99	Total n-6 Polyunsaturated (Omega-6) Fatty Acids, Miscellaneous (% (w/w))	1	1	0.1850							
758.99	Total Saturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.5600							
762.99	Total Monounsaturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.1600							
766.99	Total Polyunsaturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.3750							
770.99	Total Fat (equivalent to NLEA), Miscellaneous (% (w/w))	1	1	1.175							
772.99	Total Fatty Acids, Miscellaneous (% (w/w))	2	2	0.9630	0.2150						

Notes: Robust statistics not used if < 6 labs reporting, in this case means and SD's may be reported based on Raw Data with obvious blunders removed.

Animal Feed Scheme

# Methods Reported: 89

Alfalfa Pellets

Method Precision Report

# Labs Reporting: 190

Test Material Code # 201925

Issue Date : 06/30/2019

Method Code	Analyte and Method	Total # Labs Submitting	# Labs used in Precision Calcs	Precision Mean	Precision SD	Between Labs sL	Within Labs sr	Reproducibility sR	Between Labs %RSD	Within Labs %rstd	Reproducibility %RSD	sR/sr
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	51	47	7.764	0.3566	0.3077	0.0977	0.3229	3.98%	1.26%	4.17%	3.306
001.99	Loss on Drying, Miscellaneous (%)	22	20	7.783	0.4143	0.2670	0.0852	0.2802	3.40%	1.08%	3.56%	3.288
002.01	Protein, Crude, Auto Kjel-Foss (%)	17	16	17.16	0.3202	0.1881	0.2294	0.2966	1.09%	1.33%	1.72%	1.293
002.05	Protein, Crude, Copper, Boric Acid (%)	35	31	17.38	0.3283	0.2378	0.0703	0.2480	1.37%	0.40%	1.43%	3.529
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	119	108	17.84	0.7696	0.4459	0.1784	0.4803	2.51%	1.00%	2.70%	2.692
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	12	12	1.302	0.3781	0.3727	0.0905	0.3835	28.62%	6.95%	29.46%	4.237
003.06	Fat, Crude, Pet Ether (%)	16	16	1.256	0.3321	0.3290	0.0645	0.3353	26.19%	5.14%	26.69%	5.195
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	13	13	1.357	0.1611	0.1480	0.0901	0.1733	10.91%	6.64%	12.77%	1.923
003.10	Fat, Crude, Randall, Pet Ether (%)	31	28	0.9319	0.2754	0.2424	0.0758	0.2540	25.29%	7.91%	26.50%	3.350
003.14	Fat, Crude, Ankom (%)	52	48	1.415	0.3854	0.3053	0.0796	0.3155	21.75%	5.67%	22.48%	3.963
004.00	Fiber, Crude, Asbestos Free (%)	17	16	29.62	1.410	1.027	0.4651	1.127	3.49%	1.58%	3.83%	2.423
004.06	Fiber, Crude, Fibertec (%)	25	23	29.76	1.245	1.058	0.3176	1.105	3.57%	1.07%	3.73%	3.479
004.07	Fiber, Crude, ANKOM (%)	75	67	29.34	2.470	1.336	0.4922	1.424	4.54%	1.67%	4.84%	2.892
005.00	Ash, 2h @ 600°C (%)	99	91	11.11	0.3241	0.2220	0.1098	0.2476	1.99%	0.98%	2.22%	2.255
005.05	Ash, 3h @ 550°C (%)	40	37	11.32	0.2972	0.1987	0.0777	0.2133	1.75%	0.69%	1.88%	2.745
008.02	Fiber, Acid Detergent, Crucible (%)	17	16	37.61	2.254	1.343	0.3051	1.377	3.53%	0.80%	3.62%	4.513
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	45	42	36.24	3.908	2.639	0.5077	2.687	7.19%	1.38%	7.32%	5.293
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	14	12	47.55	2.196	1.785	0.9315	2.013	3.78%	1.97%	4.26%	2.161
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	46	44	46.62	3.252	2.646	0.6466	2.724	5.63%	1.38%	5.80%	4.212
010.99	Moisture, Miscellaneous (%)	14	13	7.951	0.8734	0.5989	0.0573	0.6016	7.70%	0.74%	7.74%	10.50
011.01	Loss on Drying, 135°C 2hr (%)	69	66	8.708	0.4673	0.4387	0.1048	0.4511	5.03%	1.20%	5.17%	4.303
012.00	Starch, Polarimetric (Ewers) (%)	14	12	2.740	0.5885	0.4187	0.1291	0.4382	16.04%	4.95%	16.78%	3.393
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	11	9	1.333	0.4191	0.3572	0.0848	0.3671	28.43%	6.75%	29.22%	4.331
013.00	Fat, Acid Pretreat, Acid hydrolysis (%)	16	15	2.322	0.5772	0.5822	0.1621	0.6044	25.26%	7.03%	26.22%	3.728
013.02	Fat, Acid Pretreat, Mojonier, Bak Ext (%)	19	18	2.824	0.5939	0.4681	0.1393	0.4884	17.09%	5.09%	17.83%	3.507
013.10	Fat, Acid Pretreat, Soxtec-Acid Hydrolysis (%)	8	8	1.864	0.3516	0.3487	0.0635	0.3544	18.71%	3.41%	19.02%	5.584
019.00	Calcium, Ox-Mn04 Vol. (%)	14	14	1.238	0.0746	0.0723	0.0256	0.0767	5.84%	2.07%	6.20%	2.994
019.08	Calcium, EDTA (%)	12	11	1.321	0.1452	0.1056	0.0214	0.1078	8.18%	1.66%	8.35%	5.027
019.31	Calcium, AAS, Dry ash (%)	23	21	1.268	0.1128	0.1141	0.0146	0.1150	8.98%	1.15%	9.05%	7.894
019.41	Calcium, ICP, Dry ash (%)	33	32	1.222	0.0740	0.0727	0.0250	0.0768	5.94%	2.04%	6.28%	3.072
019.42	Calcium, ICP, Open vessel (%)	22	21	1.226	0.0946	0.0918	0.0323	0.0974	7.49%	2.63%	7.94%	3.015
019.43	Calcium, ICP, Microwave (%)	26	24	1.249	0.1019	0.0749	0.0173	0.0769	6.08%	1.40%	6.24%	4.453
022.31	Copper, AAS, Dry ash (mg / kg (ppm))	11	9	9.376	2.916	1.259	0.3506	1.307	12.33%	3.43%	12.80%	3.728

Method Code	Analyte and Method	Total # Labs Submitting	# Labs used in Precision Calcs	Precision Mean	Precision SD	Between Labs sL	Within Labs sr	Reproducibility sR	Between Labs %RSD	Within Labs %rsd	Reproducibility %RSD	sR/sr
022.41	Copper, ICP, Dry ash (mg / kg (ppm))	25	21	10.69	2.027	1.740	0.5820	1.834	16.63%	5.56%	17.54%	3.152
022.42	Copper, ICP, Open vessel (mg / kg (ppm))	20	19	10.30	2.058	0.8202	0.5317	0.9775	8.30%	5.38%	9.89%	1.839
022.43	Copper, ICP, Microwave (mg / kg (ppm))	24	21	9.716	1.130	1.131	0.3266	1.177	11.59%	3.35%	12.07%	3.603
025.31	Iron, AAS, Dry ash (mg / kg (ppm))	17	16	992.7	115.8	76.86	13.88	78.10	7.91%	1.43%	8.04%	5.629
025.41	Iron, ICP, Dry ash (mg / kg (ppm))	27	24	962.8	124.0	58.73	21.66	62.60	5.96%	2.20%	6.35%	2.890
025.42	Iron, ICP, Open vessel (mg / kg (ppm))	18	17	872.4	112.2	110.8	25.71	113.7	12.70%	2.95%	13.03%	4.422
025.43	Iron, ICP, Microwave (mg / kg (ppm))	19	19	1,016	83.77	82.58	19.91	84.95	8.13%	1.96%	8.36%	4.266
027.31	Magnesium, AAS, Dry ash (%)	16	13	0.3335	0.0201	0.0143	0.0037	0.0148	4.28%	1.11%	4.42%	3.977
027.41	Magnesium, ICP, Dry ash (%)	28	26	0.3363	0.0283	0.0178	0.0055	0.0186	5.36%	1.67%	5.61%	3.361
027.42	Magnesium, ICP, Open vessel (%)	21	20	0.3281	0.0271	0.0264	0.0091	0.0279	8.04%	2.77%	8.50%	3.065
027.43	Magnesium, ICP, Microwave (%)	23	22	0.3345	0.0179	0.0170	0.0069	0.0184	5.11%	2.06%	5.51%	2.669
028.31	Manganese, AAS, Dry ash (mg / kg (ppm))	12	11	67.47	17.92	6.055	1.566	6.254	8.37%	2.16%	8.64%	3.993
028.41	Manganese, ICP, Dry ash (mg / kg (ppm))	25	22	70.96	5.404	2.915	2.043	3.560	4.11%	2.88%	5.01%	1.742
028.42	Manganese, ICP, Open vessel (mg / kg (ppm))	20	18	71.38	6.529	5.280	1.783	5.573	7.30%	2.47%	7.71%	3.126
028.43	Manganese, ICP, Microwave (mg / kg (ppm))	23	23	73.70	4.769	4.675	1.334	4.861	6.34%	1.81%	6.60%	3.644
031.01	Phosphorus, Photometric (%)	44	39	0.2244	0.0201	0.0185	0.0086	0.0204	8.28%	3.84%	9.13%	2.375
031.41	Phosphorus, ICP, Dry ash (%)	30	27	0.2151	0.0138	0.0116	0.0051	0.0127	5.42%	2.38%	5.92%	2.488
031.42	Phosphorus, ICP, Open vessel (%)	21	19	0.2153	0.0124	0.0118	0.0046	0.0126	5.49%	2.12%	5.89%	2.771
031.43	Phosphorus, ICP, Microwave (%)	25	23	0.2254	0.0239	0.0110	0.0066	0.0128	5.01%	3.00%	5.84%	1.945
032.31	Potassium, AAS, Dry ash (%)	13	13	2.410	0.1039	0.0997	0.0414	0.1080	4.14%	1.72%	4.48%	2.608
032.41	Potassium, ICP, Dry ash (%)	30	27	2.338	0.2914	0.1388	0.0468	0.1464	5.87%	1.98%	6.19%	3.131
032.42	Potassium, ICP, Open vessel (%)	20	20	2.399	0.1403	0.1360	0.0488	0.1445	5.67%	2.04%	6.03%	2.960
032.43	Potassium, ICP, Microwave (%)	26	23	2.421	0.2536	0.1629	0.0304	0.1657	6.77%	1.26%	6.89%	5.453
033.00	Salt as chloride, Sol Cl (%)	18	16	0.5220	0.0489	0.0345	0.0199	0.0399	6.72%	3.88%	7.76%	1.999
033.01	Salt as chloride, Poten Cl (%)	24	21	0.5447	0.0493	0.0204	0.0067	0.0214	3.76%	1.24%	3.96%	3.199
034.53	Selenium, ICP-MS, Microwave (mg / kg (ppm))	10	8	0.9120	0.6295	0.2738	0.0229	0.2748	37.22%	3.12%	37.35%	11.99
035.31	Sodium, AAS, Dry ash (%)	12	11	0.0489	0.0284	0.0174	0.0073	0.0189	40.99%	17.28%	44.48%	2.574
035.41	Sodium, ICP, Dry ash (%)	25	21	0.0457	0.0199	0.0098	0.0048	0.0109	23.29%	11.29%	25.88%	2.292
035.42	Sodium, ICP, Open vessel (%)	17	15	0.0245	0.0083	0.0058	0.0038	0.0070	25.04%	16.61%	30.05%	1.809
035.43	Sodium, ICP, Microwave (%)	19	16	0.0369	0.0389	0.0268	0.0026	0.0270	91.47%	8.82%	91.90%	10.42
036.42	Sulfur, ICP, Open vessel (%)	22	21	0.2636	0.0228	0.0227	0.0073	0.0239	8.61%	2.77%	9.04%	3.261
036.43	Sulfur, ICP, Microwave (%)	17	16	0.2946	0.0693	0.0234	0.0106	0.0257	8.38%	3.80%	9.21%	2.421
037.31	Zinc, AAS, Dry ash (mg / kg (ppm))	14	12	384.0	1,280	2.974	1.086	3.166	10.26%	3.75%	10.92%	2.915
037.41	Zinc, ICP, Dry ash (mg / kg (ppm))	26	24	30.77	8.681	5.615	1.622	5.845	19.07%	5.51%	19.85%	3.604
037.42	Zinc, ICP, Open vessel (mg / kg (ppm))	19	19	29.20	4.963	4.836	1.580	5.087	16.56%	5.41%	17.42%	3.220
037.43	Zinc, ICP, Microwave (mg / kg (ppm))	23	22	27.89	6.509	5.218	1.009	5.314	18.17%	3.51%	18.50%	5.269
120.00	Alanine, Post-col Ninhydrin Der (%)	24	23	0.8239	0.0654	0.0544	0.0130	0.0559	6.54%	1.56%	6.72%	4.298
121.00	Arginine, Post-col Ninhydrin Der (%)	25	24	0.6694	0.0679	0.0470	0.0151	0.0493	7.12%	2.29%	7.48%	3.264
121.05	Arginine, Pre-col AQC Der (%)	8	8	0.6214	0.0746	0.0719	0.0282	0.0772	11.57%	4.53%	12.43%	2.743
122.00	Aspartic, Post-col Ninhydrin Der (%)	24	23	1.815	0.1523	0.1533	0.0318	0.1566	8.46%	1.76%	8.64%	4.920
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin Der (%)	25	24	0.1946	0.0361	0.0303	0.0076	0.0313	15.92%	4.01%	16.42%	4.092
125.00	Glutamic, Post-col Ninhydrin Der (%)	24	22	1.553	0.1724	0.0831	0.0243	0.0866	5.42%	1.59%	5.65%	3.560
126.00	Glycine, Post-col Ninhydrin Der (%)	24	21	0.7790	0.0445	0.0350	0.0129	0.0373	4.46%	1.64%	4.75%	2.889

**Test Material Code # 201925**

**Issue Date : 06/30/2019**

Method Code	Analyte and Method	Total # Labs Submitting	# Labs used in Precision Calcs	Precision Mean	Precision SD	Between Labs sL	Within Labs sr	Reproducibility sR	Between Labs %RSD	Within Labs %rsd	Reproducibility %RSD	sR/sr
127.00	Histidine, Post-col Ninhydrin Der (%)	25	22	0.2452	0.0411	0.0245	0.0078	0.0257	10.39%	3.30%	10.90%	3.307
128.00	Isoleucine, Post-col Ninhydrin Der (%)	25	24	0.6607	0.0741	0.0676	0.0129	0.0688	10.33%	1.98%	10.52%	5.324
129.00	Leucine, Post-col Ninhydrin Der (%)	25	23	1.116	0.0811	0.0604	0.0184	0.0632	5.34%	1.63%	5.58%	3.430
130.00	L-Lysine, Post-col Ninhydrin Der (%)	26	24	0.7334	0.0857	0.0512	0.0102	0.0522	6.96%	1.39%	7.10%	5.124
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	26	23	0.2243	0.0283	0.0183	0.0068	0.0195	8.18%	3.05%	8.73%	2.863
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	25	22	0.7615	0.0770	0.0457	0.0124	0.0474	5.97%	1.62%	6.19%	3.823
133.00	Proline, Post-col Ninhydrin Der (%)	24	23	0.9408	0.0568	0.0558	0.0150	0.0578	5.93%	1.60%	6.14%	3.850
134.00	Serine, Post-col Ninhydrin Der (%)	24	22	0.7200	0.0648	0.0545	0.0131	0.0560	7.49%	1.80%	7.70%	4.281
135.00	Threonine, Post-col Ninhydrin Der (%)	26	24	0.6855	0.0573	0.0481	0.0139	0.0501	6.94%	2.00%	7.23%	3.607
135.05	Threonine, Pre-col AQC Der (%)	8	8	0.6612	0.0649	0.0635	0.0191	0.0663	9.60%	2.89%	10.03%	3.469
136.00	Tryptophan, Alka-Hydrol Post-col Ninhyd (%)	9	8	0.1939	0.0212	0.0029	0.0132	0.0135	1.52%	7.03%	7.19%	1.023
137.00	Tyrosine, Post-col Ninhydrin Der (%)	19	18	0.4448	0.0652	0.0386	0.0170	0.0422	8.46%	3.73%	9.24%	2.481
138.00	Valine, Post-col Ninhydrin Der (%)	25	24	0.8501	0.0787	0.0532	0.0168	0.0558	6.17%	1.95%	6.47%	3.322

Notes: Precision Calculations provided for methods with 8 or more labs used in calculations.