



**AAFCO**  
Association of American Feed Control Officials



**Animal Feed Scheme**

**Lamb Feed**

**Test Material Code # 202330**

**Method Summary Report**

(Precision Report Follows)

**# Labs Reporting: 163**

**# Methods Reported: 381**

**Issue Date : 11/30/2023**

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO #fp Robust SD	Uncertainty (U) Robust	% RSD - Robust	Average Range (Rob R-bar)	Thompson Horwitz %RSD
000.02	Urea, As protein, Colorimetric (%)	2	2	1.088	0.4066						
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	45	45	11.01	0.3570	11.01	0.3125	0.0582	2.84%	0.1345	2.79%
001.99	Loss on Drying, Miscellaneous (%)	18	18	10.78	0.7161	10.85	0.6489	0.1912	5.98%	0.1754	2.79%
001.00	Loss on Drying, Vac 95°C 5 hr (%)	4	3	11.28	0.4829	11.28	0.4829	0.2788	4.28%	0.0147	2.78%
001.03	Loss on Drying, Low temp. methods (%)	2	2	11.20	0.1202						
001.05	Loss on Drying, LECO (%)	1	1	11.02							
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	107	107	15.31	0.3407	15.31	0.2661	0.0322	1.74%	0.1912	2.56%
002.05	Protein, Crude, Copper, Boric Acid (%)	25	25	15.10	0.2338	15.09	0.2591	0.0648	1.72%	0.1212	2.57%
002.01	Protein, Crude, Auto Kjel-Foss (%)	15	15	15.20	0.2884	15.18	0.2744	0.0885	1.81%	0.1974	2.57%
002.00	Protein, Crude, Crude (%)	3	3	21.60	11.38	21.60	11.38	8.045	52.67%	0.9800	2.15%
002.11	Protein, Crude, NIR (%)	3	3	14.71	1.144	14.71	1.144	0.6607	7.78%	0.0533	2.61%
002.08	Protein, Crude, Cu/Ti (%)	2	2	15.11	0.5124						
002.02	Protein, Crude, Semiauto Autoanalyzer (%)	1	1	15.12							
002.04	Protein, Crude, Copper Catalyst (%)	1	1	15.81							
003.14	Fat, Crude, Ankom (%)	60	59	2.689	0.2806	2.680	0.2590	0.0422	9.66%	0.1243	3.45%
003.10	Fat, Crude, Randall, Pet Ether (%)	26	26	2.814	0.2728	2.782	0.2247	0.0551	8.08%	0.0888	3.43%
003.06	Fat, Crude, Pet Ether (%)	15	15	2.977	0.2332	2.969	0.2474	0.0798	8.33%	0.0890	3.40%
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	11	10	2.946	0.2045	2.946	0.2309	0.0913	7.84%	0.0479	3.40%
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	9	8	3.140	0.1954	3.140	0.2215	0.0979	7.05%	0.0590	3.37%
003.13	Fat, Crude, Randall, Hexane Ext. (%)	5	5	2.869	0.0548	2.869	0.0548	0.0245	1.91%	0.0486	3.41%
003.12	Fat, Crude, Hexane Ext (%)	4	4	3.225	0.6960	3.225	0.6960	0.3480	21.58%	0.1733	3.35%
003.01	Fat, Crude, Diethyl Ether Ext (13th ed.), Indirect (%)	3	3	3.371	0.3725	3.371	0.3725	0.2150	11.05%	0.1174	3.33%
003.11	Fat, Crude, NIR (%)	3	3	3.932	0.3213	3.932	0.3213	0.1855	8.17%	0.0700	3.25%
003.99	Fat, Crude, Miscellaneous (%)	3	3	3.613	1.360	3.613	1.360	0.7852	37.64%	0.5600	3.30%
004.07	Fiber, Crude, ANKOM (%)	76	75	5.002	0.5630	4.936	0.3904	0.0564	7.91%	0.1565	3.15%
004.06	Fiber, Crude, Fibertec (%)	17	17	5.097	0.5362	4.981	0.2772	0.0840	5.56%	0.1382	3.14%
004.00	Fiber, Crude, Asbestos Free (%)	9	9	5.245	0.4624	5.245	0.5244	0.2185	10.00%	0.2038	3.12%
004.03	Fiber, Crude, Fritted Glass (%)	5	5	5.217	0.7845	5.217	0.7845	0.3508	15.04%	0.2375	3.12%
004.11	Fiber, Crude, NIR (%)	2	2	5.803	1.085						

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004.99	Fiber, Crude, Miscellaneous (%)	1	1	4.648							
005.00	Ash, 2h @ 600°C (%)	96	95	9.019	0.3223	9.037	0.3063	0.0393	3.39%	0.1188	2.87%
005.05	Ash, 3h @ 550°C (%)	21	20	9.342	0.2233	9.335	0.1995	0.0558	2.14%	0.1129	2.86%
005.99	Ash, Miscellaneous (%)	10	10	9.323	0.3417	9.360	0.2933	0.1159	3.13%	0.1166	2.86%
005.11	Ash, NIR (%)	3	3	7.016	0.8447	7.016	0.8447	0.4877	12.04%	0.3217	2.98%
005.02	Ash, LECO (%)	1	1	9.083							
005.03	Ash, Microwave furnace (%)	1	1	8.700							
006.99	Total Sugars, Miscellaneous (%)	5	5	4.515	0.7653	4.515	0.7653	0.3422	16.95%	0.2575	3.19%
006.00	Total Sugars, As sucrose (%)	2	2	5.065	0.0502						
006.03	Total Sugars, Invert w/o Invrns (%)	1	1	4.525							
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	46	45	6.632	0.4885	6.585	0.4309	0.0803	6.54%	0.1941	3.01%
008.02	Fiber, Acid Detergent, Crucible (%)	12	12	6.459	0.2909	6.459	0.3299	0.1190	5.11%	0.2054	3.02%
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	43	42	15.59	1.053	15.49	0.8762	0.1690	5.66%	0.2364	2.54%
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	10	9	15.96	0.6728	15.96	0.7629	0.3179	4.78%	0.3004	2.50%
009.99	Fiber, Neutral Detergent, Miscellaneous (%)	2	2	18.60	2.070						
010.99	Moisture, Miscellaneous (%)	16	16	10.99	0.6792	11.06	0.5859	0.1831	5.30%	0.1058	2.79%
010.03	Moisture, Karl-Fischer (%)	2	2	11.20	0.1980						
010.11	Moisture, NIR (%)	2	2	10.38	0.3253						
011.01	Loss on Drying, HT, 135°C 2hr (%)	68	67	11.88	0.6739	11.95	0.4017	0.0613	3.36%	0.1075	2.75%
011.02	Loss on Drying, HT, 130°C for 2 hours (%)	3	3	12.51	1.531	12.51	1.531	0.8841	12.25%	0.2700	2.73%
011.99	Loss on Drying, HT, High Temp. Methods Miscellaneous (%)	2	2	11.25	0.1916						
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	14	14	30.26	9.871	33.06	3.724	1.244	11.26%	1.060	1.74%
012.00	Starch, Polarimetric (Ewers) (%)	15	13	35.19	0.9473	35.29	0.8424	0.2921	2.39%	0.2254	1.68%
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	7	7	34.19	2.320	34.19	2.630	1.243	7.69%	0.3400	1.71%
012.11	Starch, NIR (%)	3	3	37.80	4.895	37.80	4.895	2.826	12.95%	0.3367	1.63%
012.03	Starch, Enzymatic-Colorimetric Method, Miscellaneous (%)	2	2	33.35	0.2479						
012.99	Starch, Miscellaneous (%)	2	2	34.65	1.485						
012.20	Starch, Dietary, Enzymatic-Colorimetric (%)	1	1	33.11							
013.00	Fat, Pretreat, Acid hydrolysis (%)	15	14	3.810	0.5456	3.829	0.5765	0.1926	15.06%	0.1150	3.27%
013.02	Fat, Pretreat, Mojonier, Bak Ext, Acid hydrolysis (%)	14	14	4.364	0.3332	4.349	0.3457	0.1155	7.95%	0.0946	3.21%
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	10	10	3.825	0.6198	3.821	0.6676	0.2639	17.47%	0.2478	3.27%
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	5	5	3.561	0.3593	3.561	0.3593	0.1607	10.09%	0.0852	3.30%
013.08	Fat, Pretreat, Roese-Gottlieb Modified, Alkaline Hydrolysis (%)	1	1	2.410							
015.43	Aluminum, ICP, Microwave (ppm)	9	8	132.0	20.84	134.4	17.52	7.741	13.03%	3.493	7.65%
015.41	Aluminum, ICP, Dry ash (ppm)	4	4	120.3	9.441	120.3	9.441	4.720	7.85%	5.644	7.78%
015.42	Aluminum, ICP, Open vessel (ppm)	3	3	71.36	7.670	71.36	7.670	4.428	10.75%	3.465	8.42%
015.53	Aluminum, ICP-MS, Microwave (ppm)	3	3	143.5	12.19	143.5	12.19	7.036	8.49%	6.637	7.58%
015.99	Aluminum, Miscellaneous (ppm)	1	1	87.95							
017.43	Boron, ICP, Microwave (ppm)	9	8	8.578	0.7775	8.578	0.8817	0.3897	10.28%	0.2624	11.58%
017.41	Boron, ICP, Dry ash (ppm)	5	4	8.996	0.8991	8.996	0.8991	0.4495	9.99%	0.3491	11.49%

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017.42	Boron, ICP, Open vessel (ppm)	4	4	7.515	1.524	7.515	1.524	0.7622	20.29%	0.5238	11.81%
017.53	Boron, ICP-MS, Microwave (ppm)	2	2	8.749	0.4044						
019.43	Calcium, ICP, Microwave (%)	31	<b>29</b>	1.970	0.0909	<b>1.972</b>	0.0876	0.0203	4.44%	0.0474	3.61%
019.41	Calcium, ICP, Dry ash (%)	22	<b>22</b>	1.915	0.0672	<b>1.915</b>	0.0688	0.0183	3.59%	0.0444	3.63%
019.42	Calcium, ICP, Open vessel (%)	20	<b>20</b>	1.960	0.1888	<b>1.949</b>	0.1403	0.0392	7.20%	0.0570	3.62%
019.31	Calcium, AAS, Dry ash (%)	18	<b>18</b>	1.891	0.1905	<b>1.921</b>	0.1103	0.0325	5.74%	0.0581	3.63%
019.08	Calcium, EDTA (%)	12	<b>12</b>	1.981	0.1615	<b>1.955</b>	0.1050	0.0379	5.37%	0.0241	3.62%
019.00	Calcium, Ox-Mn04 Vol. (%)	5	5	1.952	0.1805	1.952	0.1805	0.0807	9.25%	0.0435	3.62%
019.99	Calcium, Miscellaneous (%)	4	4	1.908	0.2161	1.908	0.2161	0.1080	11.33%	0.0667	3.63%
019.44	Calcium, ICP, Dry ash (%)	3	3	1.926	0.1396	1.926	0.1396	0.0806	7.25%	0.0702	3.62%
019.52	Calcium, ICP-MS, Open vessel (%)	3	3	2.030	0.1725	2.030	0.1725	0.0996	8.50%	0.0444	3.60%
019.53	Calcium, ICP-MS, Microwave (%)	3	3	1.981	0.0538	1.981	0.0538	0.0311	2.72%	0.1921	3.61%
019.09	Calcium, Ion-selective electrode (%)	1	1	1.694							
019.32	Calcium, AAS, Open vessel (%)	1	1	1.885							
021.43	Cobalt, ICP, Microwave (ppm)	9	<b>8</b>	2.941	0.1508	<b>2.935</b>	0.1567	0.0693	5.34%	0.0730	13.60%
021.41	Cobalt, ICP, Dry ash (ppm)	6	<b>6</b>	2.712	0.2180	<b>2.701</b>	0.2196	0.1120	8.13%	0.1139	13.78%
021.42	Cobalt, ICP, Open vessel (ppm)	4	4	2.544	0.3242	2.544	0.3242	0.1621	12.74%	0.5063	13.90%
021.31	Cobalt, AAS, Dry ash (ppm)	3	3	4.045	2.184	4.045	2.184	1.261	54.00%	0.1333	12.96%
021.52	Cobalt, ICP-MS, Open vessel (ppm)	3	3	2.268	0.1792	2.268	0.1792	0.1035	7.90%	0.1263	14.14%
021.53	Cobalt, ICP-MS, Microwave (ppm)	3	3	3.036	0.2592	3.036	0.2592	0.1496	8.54%	0.1678	13.53%
021.00	Cobalt, Color (ppm)	1	1	2.470							
021.99	Cobalt, Miscellaneous (ppm)	1	1	2.155							
022.43	Copper, ICP, Microwave (ppm)	26	<b>25</b>	11.91	0.9786	<b>11.91</b>	1.098	0.2746	9.23%	0.4830	11.02%
022.42	Copper, ICP, Open vessel (ppm)	21	<b>21</b>	12.18	0.9001	<b>12.18</b>	1.021	0.2784	8.38%	0.6784	10.98%
022.41	Copper, ICP, Dry ash (ppm)	13	<b>13</b>	11.26	1.840	<b>11.31</b>	1.967	0.6818	17.39%	1.010	11.10%
022.31	Copper, AAS, Dry ash (ppm)	7	<b>6</b>	12.08	1.535	<b>12.08</b>	1.741	0.8885	14.42%	0.3310	11.00%
022.44	Copper, ICP, Dry ash (ppm)	3	3	12.21	0.8609	12.21	0.8609	0.6088	7.05%	0.3270	10.98%
022.53	Copper, ICP-MS, Microwave (ppm)	3	3	11.63	0.3146	11.63	0.3146	0.1816	2.71%	1.461	11.06%
022.52	Copper, ICP-MS, Open vessel (ppm)	2	2	13.05	0.0562						
022.99	Copper, Miscellaneous (ppm)	2	2	13.18	3.783						
022.33	Copper, AAS, Microwave (ppm)	1	1	17.09							
024.03	Iodine, Ion-selective electrode (ppm)	1	1	2.200							
024.52	Iodine, ICP-MS, Open vessel (ppm)	1	1	4.613							
024.53	Iodine, ICP-MS, Microwave (ppm)	1	1	3.650							
025.43	Iron, ICP, Microwave (ppm)	28	<b>27</b>	313.2	27.70	<b>310.9</b>	16.85	4.055	5.42%	8.218	6.74%
025.41	Iron, ICP, Dry ash (ppm)	19	<b>19</b>	306.6	25.83	<b>305.9</b>	25.68	7.363	8.39%	10.53	6.76%
025.42	Iron, ICP, Open vessel (ppm)	19	<b>19</b>	283.6	49.37	<b>288.4</b>	40.68	11.67	14.11%	12.94	6.82%
025.31	Iron, AAS, Dry ash (ppm)	8	<b>8</b>	335.5	68.57	<b>317.2</b>	24.85	10.98	7.83%	8.388	6.72%
025.53	Iron, ICP-MS, Microwave (ppm)	3	3	312.3	16.41	312.3	16.41	9.476	5.26%	25.22	6.74%
025.99	Iron, Miscellaneous (ppm)	2	2	306.5	24.75						

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025.33	Iron, AAS, Microwave (ppm)	1	1	295.1							
025.52	Iron, ICP-MS, Open vessel (ppm)	1	1	355.9							
027.43	Magnesium, ICP, Microwave (%)	29	29	0.3876	0.0284	0.3870	0.0239	0.0055	6.17%	0.0226	4.61%
027.42	Magnesium, ICP, Open vessel (%)	21	21	0.3770	0.0217	0.3773	0.0235	0.0064	6.23%	0.0196	4.63%
027.41	Magnesium, ICP, Dry ash (%)	18	18	0.3710	0.0158	0.3715	0.0168	0.0049	4.52%	0.0141	4.64%
027.31	Magnesium, AAS, Dry ash (%)	8	8	0.3854	0.0227	0.3846	0.0239	0.0106	6.23%	0.0243	4.62%
027.52	Magnesium, ICP-MS, Open vessel (%)	3	3	0.3932	0.0108	0.3932	0.0108	0.0062	2.74%	0.0242	4.60%
027.53	Magnesium, ICP-MS, Microwave (%)	3	3	0.3934	0.0213	0.3934	0.0213	0.0123	5.41%	0.0221	4.60%
027.99	Magnesium, Miscellaneous (%)	4	3	0.3700	0.0000	0.3700	0.0000				4.65%
027.44	Magnesium, ICP, Dry ash (%)	2	2	0.3831	0.0009						
027.32	Magnesium, AAS, Open vessel (%)	1	1	0.3750							
027.33	Magnesium, AAS, Microwave (%)	1	1	0.3900							
028.43	Manganese, ICP, Microwave (ppm)	27	27	233.9	21.17	231.0	15.47	3.722	6.70%	15.65	7.05%
028.42	Manganese, ICP, Open vessel (ppm)	22	22	242.9	23.80	241.8	22.17	5.909	9.17%	15.00	7.00%
028.41	Manganese, ICP, Dry ash (ppm)	16	16	215.9	28.93	218.4	21.58	6.744	9.88%	17.04	7.11%
028.31	Manganese, AAS, Dry ash (ppm)	8	8	244.5	43.58	235.7	25.48	11.26	10.81%	13.87	7.03%
028.53	Manganese, ICP-MS, Microwave (ppm)	4	4	228.9	11.29	228.9	11.29	5.645	4.93%	17.66	7.06%
028.44	Manganese, ICP, Dry ash (ppm)	3	3	225.8	12.86	225.8	12.86	7.422	5.69%	9.563	7.08%
028.52	Manganese, ICP-MS, Open vessel (ppm)	2	2	273.9	42.70						
028.99	Manganese, Miscellaneous (ppm)	2	2	221.5	2.121						
028.00	Manganese, Color (ppm)	1	1	199.3							
028.32	Manganese, AAS, Open vessel (ppm)	1	1	222.0							
028.33	Manganese, AAS, Microwave (ppm)	1	1	218.8							
030.01	Nitrate, Ion-selective electrode (%)	1	1	0.0050							
031.01	Phosphorus, Photometric (%)	34	33	0.7853	0.0357	0.7889	0.0288	0.0063	3.66%	0.0157	4.15%
031.43	Phosphorus, ICP, Microwave (%)	32	31	0.8197	0.0510	0.8146	0.0381	0.0085	4.67%	0.0212	4.13%
031.41	Phosphorus, ICP, Dry ash (%)	21	21	0.7907	0.0325	0.7919	0.0302	0.0082	3.82%	0.0197	4.14%
031.42	Phosphorus, ICP, Open vessel (%)	21	21	0.8160	0.0519	0.8139	0.0532	0.0145	6.54%	0.0283	4.13%
031.44	Phosphorus, ICP, Dry ash (%)	3	3	0.7870	0.0126	0.7870	0.0126	0.0073	1.60%	0.0149	4.15%
031.53	Phosphorus, ICP-MS, Microwave (%)	3	3	0.8640	0.0612	0.8640	0.0612	0.0433	7.09%	0.1171	4.09%
031.99	Phosphorus, Miscellaneous (%)	3	3	0.7250	0.1646	0.7250	0.1646	0.0950	22.71%	0.0200	4.20%
031.03	Phosphorus, Autoanalyzer (%)	2	2	0.7980	0.0184						
031.52	Phosphorus, ICP-MS, Open vessel (%)	2	2	0.9282	0.1755						
031.06	Phosphorus, Hach Method (%)	1	1	0.8250							
032.43	Potassium, ICP, Microwave (%)	29	28	0.9662	0.0591	0.9582	0.0391	0.0092	4.08%	0.0217	4.03%
032.42	Potassium, ICP, Open vessel (%)	20	20	1.002	0.0706	0.9939	0.0615	0.0172	6.18%	0.0401	4.00%
032.41	Potassium, ICP, Dry ash (%)	19	18	0.9462	0.0509	0.9479	0.0528	0.0156	5.57%	0.0199	4.03%
032.31	Potassium, AAS, Dry ash (%)	8	8	0.9478	0.0797	0.9478	0.0903	0.0399	9.53%	0.0319	4.03%
032.99	Potassium, Miscellaneous (%)	5	4	0.9433	0.0373	0.9433	0.0373	0.0187	3.96%	0.0133	4.03%
032.52	Potassium, ICP-MS, Open vessel (%)	3	3	0.9102	0.0717	0.9102	0.0717	0.0414	7.88%	0.0391	4.06%

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032.53	Potassium, ICP-MS, Microwave (%)	3	3	1.011	0.0654	1.011	0.0654	0.0378	6.47%	0.0876	3.99%
032.44	Potassium, ICP, Dry ash (%)	2	2	0.9536	0.0169						
032.32	Potassium, AAS, Open vessel (%)	1	1	0.9500							
033.01	Salt as chloride, Poten Cl (%)	27	25	1.723	0.0385	1.723	0.0348	0.0087	2.02%	0.0206	3.69%
033.00	Salt as chloride, Sol Cl (%)	15	15	1.631	0.1802	1.662	0.1043	0.0337	6.28%	0.0404	3.71%
033.99	Salt, Miscellaneous (%)	7	7	1.454	0.2956	1.454	0.3352	0.1584	23.06%	0.0680	3.78%
033.03	Salt as chloride, Quantab (%)	4	3	1.510	0.0819	1.510	0.0819				3.76%
033.05	Salt as chloride, Ion Sel Electrode (%)	3	3	1.472	0.2411	1.472	0.2411	0.1392	16.38%	0.0150	3.77%
034.04	Selenium, Total (Se), AA, Hydride (ppm)	4	4	2.093	0.3198	2.093	0.3198	0.1599	15.28%	0.1704	14.31%
034.43	Selenium, Total (Se), ICP, Microwave (ppm)	6	4	2.679	0.4745	2.679	0.4745	0.3618	17.71%	0.1058	13.79%
034.53	Selenium, Total (Se), ICP-MS, Microwave (ppm)	5	4	2.749	0.5827	2.749	0.5827	0.2913	21.20%	0.0899	13.74%
034.41	Selenium, Total (Se), ICP, Dry ash (ppm)	3	3	2.845	0.3351	2.845	0.3351	0.1935	11.78%	0.3117	13.67%
034.52	Selenium, Total (Se), ICP-MS, Open vessel (ppm)	3	3	2.413	0.0114	2.413	0.0114	0.0066	0.47%	0.2939	14.01%
034.01	Selenium, Total (Se), Fluor (ppm)	1	1	2.790							
034.42	Selenium, Total (Se), ICP, Open vessel (ppm)	2	1	2.505							
034.99	Selenium, Total (Se), Miscellaneous (ppm)	1	1	2.640							
035.43	Sodium, ICP, Microwave (%)	24	24	0.4373	0.0308	0.4337	0.0250	0.0064	5.77%	0.0161	4.54%
035.41	Sodium, ICP, Dry ash (%)	18	17	0.4239	0.0140	0.4253	0.0118	0.0036	2.78%	0.0128	4.55%
035.42	Sodium, ICP, Open vessel (%)	17	17	0.4342	0.0490	0.4270	0.0253	0.0077	5.93%	0.0193	4.55%
035.31	Sodium, AAS, Dry ash (%)	7	7	0.5228	0.3119	0.4084	0.0136	0.0064	3.33%	0.0153	4.58%
035.53	Sodium, ICP-MS, Microwave (%)	3	3	0.4282	0.0237	0.4282	0.0237	0.0137	5.54%	0.0397	4.54%
035.99	Sodium, Miscellaneous (%)	3	3	0.3100	0.1870	0.3100	0.1870	0.1322	60.33%		4.77%
035.05	Sodium, Flame Emission (%)	2	2	0.4308	0.0272						
035.52	Sodium, ICP-MS, Open vessel (%)	2	2	0.4564	0.0080						
036.42	Sulfur, ICP, Open vessel (%)	19	19	0.2952	0.0131	0.2945	0.0121	0.0035	4.11%	0.0106	4.81%
036.43	Sulfur, ICP, Microwave (%)	19	18	0.3123	0.0273	0.3120	0.0304	0.0090	9.74%	0.0165	4.77%
036.04	Sulfur, LECO (%)	5	4	0.3041	0.0059	0.3041	0.0059	0.0029	1.94%	0.0045	4.78%
036.00	Sulfur, Gravimetric (%)	1	1	0.3280							
036.52	Sulfur, ICP-MS, Open vessel (%)	1	1	0.3087							
036.99	Sulfur, Miscellaneous (%)	1	1	0.2375							
037.43	Zinc, ICP, Microwave (ppm)	31	30	503.9	38.39	502.2	38.40	8.763	7.65%	13.30	6.27%
037.42	Zinc, ICP, Open vessel (ppm)	21	21	497.6	44.77	496.3	44.43	12.12	8.95%	26.37	6.29%
037.41	Zinc, ICP, Dry ash (ppm)	17	17	483.8	39.31	478.2	25.79	7.819	5.39%	17.64	6.32%
037.31	Zinc, AAS, Dry ash (ppm)	8	8	605.0	220.5	557.5	119.8	52.93	21.48%	16.41	6.18%
037.44	Zinc, ICP, Dry ash (ppm)	3	3	482.2	5.687	482.2	5.687	3.283	1.18%	20.02	6.31%
037.53	Zinc, ICP-MS, Microwave (ppm)	3	3	488.3	16.97	488.3	16.97	12.00	3.47%	40.33	6.30%
037.99	Zinc, Miscellaneous (ppm)	3	3	443.9	57.01	443.9	57.01	32.91	12.84%	13.13	6.39%
037.52	Zinc, ICP-MS, Open vessel (ppm)	2	2	572.6	170.9						
037.32	Zinc, AAS, Open vessel (ppm)	1	1	504.0							
037.33	Zinc, AAS, Microwave (ppm)	1	1	501.7							

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038.43	Molybdenum, ICP, Microwave (ppm)	9	9	5.861	1.288	6.061	0.9306	0.3877	15.35%	0.4682	12.20%
038.42	Molybdenum, ICP, Open vessel (ppm)	7	7	6.787	1.225	6.605	0.9325	0.4406	14.12%	0.9550	12.04%
038.41	Molybdenum, ICP, Dry ash (ppm)	4	4	6.029	0.5007	6.029	0.5007	0.2503	8.30%	0.6656	12.21%
038.52	Molybdenum, ICP-MS, Open vessel (ppm)	3	3	6.228	0.9691	6.228	0.9691	0.5595	15.56%	0.4577	12.15%
038.53	Molybdenum, ICP-MS, Microwave (ppm)	3	3	6.211	0.1544	6.211	0.1544	0.0891	2.49%	0.3558	12.15%
040.53	Barium, ICP-MS, Microwave (ppm)	2	2	8.954	0.0338						
040.43	Barium, ICP, Microwave (ppm)	1	1	8.865							
041.53	Vanadium, ICP-MS, Microwave (ppm)	2	2	0.9387	0.0971						
041.43	Vanadium, ICP, Microwave (ppm)	1	1	0.9100							
042.00	Chloride, Titrimetric (%)	6	6	1.204	0.2282	1.167	0.1653	0.0844	14.17%	0.0450	3.91%
042.01	Chloride, Ion-selective electrode (%)	1	1	0.9493							
042.99	Chloride, Miscellaneous (%)	1	1	1.105							
101.99	Choline Chloride, Miscellaneous (ppm)	1	1	1,330							
102.01	Niacin, Microbiological (ppm)	1	1	65.15							
103.01	Pantothenic Acid, Microbiological (ppm)	1	1	13.70							
104.00	Riboflavin, Fluorometric (ppm)	1	1	4.555							
104.03	Riboflavin, LC (ppm)	1	1	3.310							
105.00	Thiamine, LC (ppm)	1	1	5.890							
105.01	Thiamine, Fluorometer (ppm)	1	1	4.595							
106.02	Vitamin A, LC (KU / kg)	8	8	21.57	4.291	21.56	4.866	2.151	22.57%	3.436	
106.00	Vitamin A, Color (KU / kg)	1	1	18.30							
106.01	Vitamin A, UV (KU / kg)	1	1	19.65							
107.00	Vitamin B12, Microbiological (ppb)	1		4.400							
108.02	Vitamin D3, LC (KU / kg)	4	4	2.348	0.4462	2.348	0.4462	0.2231	19.01%	1.270	
108.99	Vitamin D3, Miscellaneous (KU / kg)	1	1	2.105							
109.02	Vitamin E, LC (IU / kg)	10	9	107.4	22.96	103.4	14.99	6.247	14.50%	3.923	
109.99	Vitamin E, Miscellaneous (IU / kg)	1	1	98.00							
111.00	Vitamin C, Phosphorylated, LC (ppm)	1		4.400							
111.98	Vitamin C, Ascorbic Acid, Miscellaneous (ppm)	1		1.000							
112.01	Pyridoxine, LC (µg / g)	1	1	3.705							
115.99	Non Protein N (NPN), Miscellaneous (%)	2	2	0.4520	0.3281						
115.00	Non Protein N (NPN), Urea + Am, Urease method (%)	1	1	0.3067							
120.00	Alanine, Post-col Ninhydrin Der (%)	18	18	0.7236	0.0366	0.7283	0.0156	0.0046	2.14%	0.0098	4.20%
120.05	Alanine, Pre-col AQC Der (%)	8	8	0.7231	0.0671	0.7216	0.0726	0.0321	10.06%	0.0329	4.20%
120.99	Alanine, Miscellaneous (%)	2	2	0.6988	0.0513						
120.02	Alanine, Post-col OPA Der (%)	1	1	0.7400							
121.00	Arginine, Post-col Ninhydrin Der (%)	18	17	0.9107	0.0383	0.9127	0.0385	0.0117	4.22%	0.0122	4.06%
121.05	Arginine, Pre-col AQC Der (%)	8	8	0.9516	0.0771	0.9516	0.0874	0.0386	9.19%	0.0387	4.03%
121.99	Arginine, Miscellaneous (%)	2	2	0.8725	0.0106						
121.02	Arginine, Post-col OPA Der (%)	1	1	0.8770							

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122.00	Aspartic, Post-col Ninhydrin Der (%)	18	18	1.255	0.0835	1.270	0.0363	0.0107	2.86%	0.0234	3.86%
122.05	Aspartic, Pre-col AQC Der (%)	8	8	1.254	0.1262	1.254	0.1431	0.0632	11.41%	0.0766	3.87%
122.99	Aspartic, Miscellaneous (%)	2	2	1.250	0.0495						
122.02	Aspartic, Post-col OPA Der (%)	1	1	1.343							
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin Der (%)	18	18	0.2555	0.0146	0.2553	0.0113	0.0033	4.43%	0.0077	4.91%
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	8	8	0.2580	0.0538	0.2580	0.0610	0.0270	23.66%	0.0141	4.90%
124.99	Cysteine/Cystine, Miscellaneous (%)	3	3	0.2721	0.0901	0.2721	0.0901	0.0637	33.13%		4.87%
124.02	Cysteine/Cystine, PAO Post-col OPA Der (%)	1	1	0.2625							
125.00	Glutamic, Post-col Ninhydrin Der (%)	18	18	2.561	0.0787	2.557	0.0628	0.0185	2.46%	0.0158	3.47%
125.05	Glutamic, Pre-col AQC Der (%)	8	8	2.532	0.2385	2.514	0.2272	0.1004	9.04%	0.1188	3.48%
125.99	Glutamic, Miscellaneous (%)	2	2	2.513	0.0884						
125.02	Glutamic, Post-col OPA Der (%)	1	1	2.610							
126.00	Glycine, Post-col Ninhydrin Der (%)	18	16	0.6356	0.0222	0.6340	0.0156	0.0049	2.47%	0.0069	4.28%
126.05	Glycine, Pre-col AQC Der (%)	8	8	0.6680	0.0807	0.6544	0.0559	0.0247	8.54%	0.0127	4.26%
126.99	Glycine, Miscellaneous (%)	2	2	0.4988	0.2068						
126.02	Glycine, Post-col OPA Der (%)	1	1	0.6510							
127.00	Histidine, Post-col Ninhydrin Der (%)	18	18	0.3652	0.0271	0.3639	0.0217	0.0064	5.97%	0.0112	4.66%
127.05	Histidine, Pre-col AQC Der (%)	8	8	0.3782	0.0690	0.3675	0.0509	0.0225	13.84%	0.0100	4.65%
127.99	Histidine, Miscellaneous (%)	2	2	0.3613	0.0124						
127.02	Histidine, Post-col OPA Der (%)	1	1	0.3625							
128.00	Isoleucine, Post-col Ninhydrin Der (%)	18	18	0.5215	0.0300	0.5193	0.0287	0.0084	5.52%	0.0094	4.41%
128.05	Isoleucine, Pre-col AQC Der (%)	8	8	0.5313	0.0903	0.5516	0.0462	0.0204	8.37%	0.0142	4.37%
128.99	Isoleucine, Miscellaneous (%)	2	2	0.5013	0.0477						
128.02	Isoleucine, Post-col OPA Der (%)	1	1	0.5330							
129.00	Leucine, Post-col Ninhydrin Der (%)	18	18	1.115	0.0480	1.117	0.0361	0.0106	3.23%	0.0134	3.93%
129.05	Leucine, Pre-col AQC Der (%)	8	8	1.145	0.1191	1.145	0.1336	0.0591	11.67%	0.0213	3.92%
129.99	Leucine, Miscellaneous (%)	2	2	0.9088	0.3412						
129.02	Leucine, Post-col OPA Der (%)	1	1	1.127							
130.00	L-Lysine, Post-col Ninhydrin Der (%)	18	17	0.6338	0.0263	0.6320	0.0253	0.0077	4.00%	0.0074	4.29%
130.05	L-Lysine, Pre-col AQC Der (%)	8	8	0.6473	0.1261	0.6234	0.0790	0.0349	12.68%	0.0524	4.29%
130.99	L-Lysine, Miscellaneous (%)	3	3	0.7228	0.0344	0.7228	0.0344	0.0199	4.76%	0.0585	4.20%
130.02	L-Lysine, Post-col OPA Der (%)	1	1	0.6705							
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	18	17	0.2117	0.0134	0.2096	0.0096	0.0029	4.59%	0.0083	5.06%
131.05	Methionine, PAO Pre-col AQC Der (%)	8	8	0.2494	0.0756	0.2375	0.0549	0.0243	23.12%	0.0156	4.97%
131.99	Methionine, Miscellaneous (%)	3	3	0.2201	0.0249	0.2201	0.0249	0.0176	11.30%		5.02%
131.02	Methionine, PAO Post-col OPA Der (%)	1	1	0.2100							
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	18	18	0.6679	0.0295	0.6689	0.0267	0.0079	3.99%	0.0125	4.25%
132.05	Phenylalanine, Pre-col AQC Der (%)	8	7	0.6656	0.0646	0.6539	0.0432	0.0204	6.60%	0.0100	4.26%
132.99	Phenylalanine, Miscellaneous (%)	2	2	0.6413	0.0619						
132.02	Phenylalanine, Post-col OPA Der (%)	1	1	0.6650							

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133.00	Proline, Post-col Ninhydrin Der (%)	18	17	0.8555	0.0419	0.8501	0.0346	0.0105	4.07%	0.0103	4.10%
133.05	Proline, Pre-col AQC Der (%)	8	8	0.8803	0.0620	0.8803	0.0703	0.0311	7.99%	0.0162	4.08%
133.99	Proline, Miscellaneous (%)	2	2	0.9063	0.0583						
134.00	Serine, Post-col Ninhydrin Der (%)	18	18	0.6608	0.0292	0.6634	0.0205	0.0060	3.09%	0.0130	4.25%
134.05	Serine, Pre-col AQC Der (%)	8	8	0.7083	0.0582	0.7001	0.0450	0.0199	6.43%	0.0203	4.22%
134.99	Serine, Miscellaneous (%)	2	2	0.7813	0.1432						
134.02	Serine, Post-col OPA Der (%)	1	1	0.5545							
135.00	Threonine, Post-col Ninhydrin Der (%)	18	18	0.5017	0.0149	0.5016	0.0159	0.0047	3.16%	0.0082	4.44%
135.05	Threonine, Pre-col AQC Der (%)	8	8	0.5102	0.0602	0.5053	0.0565	0.0250	11.17%	0.0169	4.43%
135.99	Threonine, Miscellaneous (%)	3	3	0.5541	0.0382	0.5541	0.0382	0.0220	6.89%	0.0177	4.37%
135.02	Threonine, Post-col OPA Der (%)	1	1	0.4900							
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	8	8	0.1799	0.0066	0.1799	0.0075	0.0033	4.17%	0.0089	5.18%
136.00	Tryptophan, Alka-Hydrol Post-col Ninhyd (%)	5	5	0.1732	0.0246	0.1732	0.0246	0.0110	14.17%	0.0115	5.21%
136.05	Tryptophan, Pre-col AQC Der (%)	4	4	0.1642	0.0143	0.1642	0.0143	0.0071	8.69%	0.0122	5.25%
136.99	Tryptophan, Miscellaneous (%)	3	3	0.2342	0.1371	0.2342	0.1371	0.0792	58.55%	0.0033	4.98%
136.01	Tryptophan, Alka-Hydrol Rev Phase LC UV (%)	2	2	0.1870	0.0035						
136.02	Tryptophan, Alka-Hydrol Post-col OPA De (%)	1	1	0.1760							
137.00	Tyrosine, Post-col Ninhydrin Der (%)	14	14	0.4296	0.0675	0.4385	0.0547	0.0183	12.47%	0.0126	4.53%
137.05	Tyrosine, Pre-col AQC Der (%)	7	6	0.4515	0.0271	0.4515	0.0307	0.0157	6.79%	0.0044	4.51%
137.99	Tyrosine, Miscellaneous (%)	2	2	0.3838	0.0124						
137.02	Tyrosine, Post-col OPA Der (%)	1	1	0.3855							
138.00	Valine, Post-col Ninhydrin Der (%)	18	17	0.6588	0.0468	0.6588	0.0323	0.0098	4.90%	0.0095	4.26%
138.05	Valine, Pre-col AQC Der (%)	8	7	0.6525	0.1292	0.6607	0.1003	0.0474	15.17%	0.0173	4.26%
138.99	Valine, Miscellaneous (%)	2	2	0.6725	0.0318						
138.02	Valine, Post-col OPA Der (%)	1	1	0.6995							
139.00	Taurine, Post-col Ninhydrin Der (%)	2	2	0.1500	0.1273						
139.05	Taurine, Pre-col AQC Der (%)	2	1	0.0995							
139.99	Taurine, Miscellaneous (%)	2	1	0.0050							
139.02	Taurine, Post-col OPA Der (%)	1		0.0100							
160.10	Fructose, HPAEC PAD (%)	1	1	0.6550							
160.99	Fructose, Miscellaneous (%)	1	1	0.6950							
161.10	Galactose, HPAEC PAD (%)	1		0.0000							
162.99	Glucose, Miscellaneous (%)	3	3	1.903	2.379	1.903	2.379	1.682	124.99%	0.1153	3.63%
162.10	Glucose, HPAEC PAD (%)	1	1	0.5100							
163.10	Lactose, HPAEC PAD (%)	1		0.0000							
163.99	Lactose, Miscellaneous (%)	2		0.0500							
164.10	Maltose, HPAEC PAD (%)	1	1	0.2300							
164.99	Maltose, Miscellaneous (%)	2	1	0.0965							
165.99	Sucrose, Miscellaneous (%)	2	2	2.288	0.0813						
165.10	Sucrose, HPAEC PAD (%)	1	1	2.640							



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166.10	Raffinose, HPAEC PAD (%)	1	1	0.4650							
166.99	Raffinose, Miscellaneous (%)	1	1	0.3300							
167.10	Stachyose, HPAEC PAD (%)	1	1	0.7250							
167.99	Stachyose, Miscellaneous (%)	1	1	0.5200							
311.03	Tylvalosin Tartarate, LC-MS/MS (ppm)	1	1	1.175							
345.04	Amprolium, LC-MS/MS (ppm)	2	2	2.015	0.7708						
345.02	Amprolium, LC (UV or FL) (ppm)	3	1								
351.03	Chlortetracycline, LC (UV or FL) (ppm)	1		3.000							
354.01	Decoquinat, LC (UV or FL) (ppm)	1	1	0.8000							
361.02	Lasalocid Sodium, LC (ppm)	1		0.1000							
365.02	Monensin, LC (ppm)	1		0.1000							
367.99	Nicarbazin, Miscellaneous (ppm)	1		0.1000							
386.02	Tiamulin, LC-MS/MS (ppm)	4	4	3.676	0.5350	3.676	0.5350	0.2675	14.55%	0.3113	13.15%
388.05	Tylosin, LC-MS/MS (ppm)	2	2	2.650	1.556						
388.03	Tylosin, LC (ppm)	2	1	1.500							
392.99	Fenbendazole, Miscellaneous (ppm)	1		1.000							
400.01	Water Activity, Aqualab chilled mirror (Units)	8	8	0.6040	0.0107	0.6042	0.0116	0.0051	1.91%	0.0035	
516.53	Arsenic, Total (As), ICP-MS, Microwave (ppm)	3	3	0.0702	0.0015	0.0702	0.0015	0.0009	2.12%	0.0080	22.00%
516.52	Arsenic, Total (As), ICP-MS, Open vessel (ppm)	2	2	0.0621	0.0030						
516.00	Arsenic, Total (As), AA, Hydride (ppm)	1	1	0.0500							
516.43	Arsenic, Total (As), ICP, Microwave (ppm)	3	1								
518.43	Cadmium, ICP, Microwave (ppm)	4	3	0.1064	0.0127	0.1064	0.0127	0.0090	11.96%		22.00%
518.53	Cadmium, ICP-MS, Microwave (ppm)	3	3	0.1106	0.0043	0.1106	0.0043	0.0025	3.85%	0.0063	22.00%
518.52	Cadmium, ICP-MS, Open vessel (ppm)	2	2	0.1046	0.0065						
518.41	Cadmium, ICP, Dry ash (ppm)	1	1	0.1072							
518.99	Cadmium, Miscellaneous (ppm)	1	1	0.1081							
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	8	8	6.492	0.7763	6.448	0.7778	0.3437	12.06%	0.3359	12.08%
520.53	Chromium, Total (Cr), ICP-MS, Microwave (ppm)	4	4	6.679	0.2672	6.679	0.2672	0.1336	4.00%	0.6609	12.02%
520.42	Chromium, Total (Cr), ICP, Open vessel (ppm)	3	3	5.814	0.9277	5.814	0.9277	0.5356	15.96%	0.6730	12.27%
520.41	Chromium, Total (Cr), ICP, Dry ash (ppm)	1	1	4.182							
520.51	Chromium, Total (Cr), ICP-MS, Dry ash (ppm)	1	1	4.195							
520.52	Chromium, Total (Cr), ICP-MS, Open vessel (ppm)	1	1	4.264							
526.53	Lead, ICP-MS, Microwave (ppm)	4	4	0.1683	0.0188	0.1683	0.0188	0.0094	11.14%	0.0197	20.92%
526.43	Lead, ICP, Microwave (ppm)	4	2	0.2154	0.0996	0.2154	0.0996			0.0191	20.15%
526.52	Lead, ICP-MS, Open vessel (ppm)	2	2	0.1659	0.0155						
526.41	Lead, ICP, Dry ash (ppm)	1	1	0.3225							
529.99	Mercury, Miscellaneous (ppb)	4	1								
539.43	Nickel, ICP, Microwave (ppm)	5	5	2.585	0.4038	2.585	0.4038	0.1806	15.62%	0.0938	13.87%
539.53	Nickel, ICP-MS, Microwave (ppm)	3	3	2.817	0.2377	2.817	0.2377	0.1372	8.44%	0.3093	13.69%
539.41	Nickel, ICP, Dry ash (ppm)	1	1	2.099							

Method Code	Analyte and Method	Total # Labs Submitting	# Labs in Robust Calcs	Raw Mean	Raw SD	Assigned Value Robust Mean	AAFCO ffp Robust SD	Uncertainty (U) - Robust	% RSD - Robust	Average Range (Rob R-bar)	Thompson Horwitz %RSD
539.51	Nickel, ICP-MS, Dry ash (ppm)	1	1	1.755							
539.52	Nickel, ICP-MS, Open vessel (ppm)	1	1	1.874							
702.00	Butyric Acid (4:0), Miscellaneous GC (%)	1		0.0200							
704.00	Caproic Acid (6:0) , Miscellaneous GC (%)	1		0.0200							
706.99	Caprylic acid (8:0), Miscellaneous (% (w/w))	2		0.0200							
708.99	Capric acid (10:0), Miscellaneous (% (w/w))	2		0.0200							
710.99	Lauric Acid (12:0), Miscellaneous (% (w/w))	3									
714.99	Myristic Acid (14:0) , Miscellaneous (% (w/w))	2	1	0.0064							
716.99	Palmitic Acid (16:0), Miscellaneous (% (w/w))	2	2	0.5708	0.0208						
718.99	Palmitoleic Acid (9c-16:1), Miscellaneous (% (w/w))	2	1	0.0067							
720.99	Margaric acid (17:0), Miscellaneous (% (w/w))	1		0.0200							
722.99	Stearic Acid (18:0), Miscellaneous (% (w/w))	2	2	0.0794	0.0001						
724.99	Oleic Acid (9c-18:1), Miscellaneous (% (w/w))	2	2	0.7787	0.0187						
726.99	Linoleic Acid (9c,12c-18:2), Miscellaneous (% (w/w))	2	2	1.605	0.0440						
728.99	alpha-Linolenic Acid (9c,12c,15c-18:3), Miscellaneous (% (w/w))	2	2	0.0887	0.0010						
730.99	Arachidic Acid (20:0), Miscellaneous (% (w/w))	2	1	0.0119							
732.99	Gondoic Acid (11c-20:1), Miscellaneous (% (w/w))	2	1	0.0143							
736.99	Arachidonic Acid (5c,8c,11c,14c-20:4), Miscellaneous (% (w/w))	1		0.0200							
740.99	Eicosapentaenoic Acid EPA (5c,8c,11c,14c,17c-20:5), Miscellaneous (% (w/w))	3									
742.99	Behenic Acid (22:0), Miscellaneous (% (w/w))	2	1	0.0076							
744.99	Erucic Acid (13c-22:1), Miscellaneous (% (w/w))	3									
746.99	Docosapentaenoic Acid n-3 DPA (7c,10c,13c,16c,19c-22:5), Miscellaneous (%)	3									
748.99	Lignoceric Acid (24:0), Miscellaneous (% (w/w))	2	1	0.0093							
750.99	Docosahexaenoic Acid DHA (4c,7c,10c,13c,16c,19c-22:6), Miscellaneous (%)	3									
752.99	Nervonic Acid (24:1) isomers, Miscellaneous (% (w/w))	2		0.0050							
754.99	Total n-3 Polyunsaturated (Omega-3) Fatty Acids, Miscellaneous (% (w/w))	1	1	0.0895							
756.99	Total n-6 Polyunsaturated (Omega-6) Fatty Acids, Miscellaneous (% (w/w))	1	1	1.580							
758.99	Total Saturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.7225							
764.99	Total cis Monounsaturated Fatty Acids, Miscellaneous (% (w/w))	1	1	0.8345							
768.99	Total cis Polyunsaturated Fatty Acids, Miscellaneous (% (w/w))	1	1	1.672							
770.99	Total Fat (equivalent to NLEA), Miscellaneous (% (w/w))	1	1	3.388							
772.99	Total Fatty Acids, Miscellaneous (% (w/w))	2	2	3.224	0.0202						

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. Robust Assigned Values indicated in bold font.



**Animal Feed Scheme**

**# Methods Reported: 123**

**Lamb Feed**

**Method Precision Report**

**# Labs Reporting: 163**

**Test Material Code # 202330**

**Issue Date : 11/30/2023**

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
001.07	Loss on Drying, 104°C 3 hr, in malt (%)	45	43	11.01	0.3570	0.3229	0.1356	0.3502	2.94%	1.23%	3.19%	2.583
001.99	Loss on Drying, Miscellaneous (%)	18	17	10.78	0.7161	0.5775	0.1759	0.6037	5.31%	1.62%	5.55%	3.432
002.01	Protein, Crude, Auto Kjel-Foss (%)	15	13	15.20	0.2884	0.1900	0.1340	0.2325	1.26%	0.89%	1.54%	1.735
002.05	Protein, Crude, Copper, Boric Acid (%)	25	23	15.10	0.2338	0.2183	0.1164	0.2474	1.44%	0.77%	1.64%	2.124
002.06	Protein, Crude, Combustion Nitrogen Analyzer (%)	107	98	15.31	0.3407	0.2337	0.1619	0.2843	1.53%	1.06%	1.86%	1.756
003.00	Fat, Crude, Diethyl Ether Ext., Direct (%)	9	7	3.140	0.1954	0.2033	0.0361	0.2065	6.44%	1.14%	6.54%	5.723
003.06	Fat, Crude, Pet Ether (%)	15	14	2.977	0.2332	0.2386	0.0571	0.2453	8.02%	1.92%	8.24%	4.295
003.09	Fat, Crude, Randall, Diethyl Ether Ext (%)	11	9	2.946	0.2045	0.2149	0.0349	0.2177	7.28%	1.18%	7.38%	6.245
003.10	Fat, Crude, Randall, Pet Ether (%)	26	24	2.814	0.2728	0.2361	0.0799	0.2493	8.46%	2.87%	8.94%	3.118
003.13	Fat, Crude, Randall, Hexane Ext. (%)	5	5	2.869	0.0548	0.0457	0.0427	0.0625	1.59%	1.49%	2.18%	1.465
003.14	Fat, Crude, Ankom (%)	60	55	2.689	0.2806	0.2434	0.1154	0.2694	9.08%	4.30%	10.04%	2.335
004.00	Fiber, Crude, Asbestos Free (%)	9	9	5.245	0.4624	0.4389	0.2060	0.4848	8.37%	3.93%	9.24%	2.353
004.03	Fiber, Crude, Fritted Glass (%)	5	5	5.217	0.7845	0.7731	0.1877	0.7956	14.82%	3.60%	15.25%	4.238
004.06	Fiber, Crude, Fibertec (%)	17	15	5.097	0.5362	0.4083	0.0853	0.4171	8.18%	1.71%	8.36%	4.889
004.07	Fiber, Crude, ANKOM (%)	76	70	5.002	0.5630	0.3709	0.1347	0.3946	7.53%	2.73%	8.01%	2.930
005.00	Ash, 2h @ 600°C (%)	96	90	9.019	0.3223	0.2868	0.1071	0.3061	3.17%	1.19%	3.39%	2.859
005.05	Ash, 3h @ 550°C (%)	21	20	9.342	0.2233	0.2100	0.1077	0.2360	2.25%	1.15%	2.53%	2.191
005.99	Ash, Miscellaneous (%)	10	9	9.323	0.3417	0.2100	0.0926	0.2295	2.23%	0.98%	2.44%	2.477
006.99	Total Sugars, Miscellaneous (%)	5	5	4.515	0.7653	0.7545	0.1805	0.7758	16.71%	4.00%	17.18%	4.299
008.02	Fiber, Acid Detergent, Crucible (%)	12	11	6.459	0.2909	0.2740	0.1408	0.3081	4.23%	2.17%	4.75%	2.188
008.08	Fiber, Acid Detergent, Filter Bag - ANKOM (%)	46	43	6.632	0.4885	0.4184	0.1767	0.4542	6.35%	2.68%	6.89%	2.571
009.07	Fiber, Neutral Detergent, AOAC -ENZ Pretreat (%)	10	9	15.96	0.6728	0.6505	0.2426	0.6943	4.08%	1.52%	4.35%	2.861
009.09	Fiber, Neutral Detergent, Filter Bag - ANKOM (%)	43	39	15.59	1.053	0.7760	0.2132	0.8048	5.03%	1.38%	5.21%	3.774
010.99	Moisture, Miscellaneous (%)	16	15	10.99	0.6792	0.4718	0.0953	0.4813	4.24%	0.86%	4.33%	5.052
011.01	Loss on Drying, HT, 135°C 2hr (%)	68	61	11.88	0.6739	0.3565	0.0922	0.3682	2.98%	0.77%	3.07%	3.994
012.00	Starch, Polarimetric (Ewers) (%)	15	12	35.19	0.9473	0.8962	0.1952	0.9172	2.55%	0.56%	2.61%	4.698
012.01	Starch, Enzymatic-Colorimetric Method (Megazyme) (%)	14	13	30.26	9.871	7.571	0.9679	7.633	23.63%	3.02%	23.83%	7.886
012.04	Starch, Enzymatic-Enzyme Membrane Technology (YSI) (%)	7	7	34.19	2.320	2.313	0.2468	2.326	6.77%	0.72%	6.80%	9.426
013.00	Fat, Pretreat, Acid hydrolysis (%)	15	14	3.810	0.5456	0.5421	0.0873	0.5491	14.23%	2.29%	14.41%	6.288
013.02	Fat, Pretreat, Mojonnier, Bak Ext, Acid hydrolysis (%)	14	14	4.364	0.3332	0.3271	0.0891	0.3391	7.50%	2.04%	7.77%	3.805
013.10	Fat, Pretreat, Soxtec-Acid Hydrolysis (%)	5	5	3.561	0.3593	0.3565	0.0631	0.3621	10.01%	1.77%	10.17%	5.737
013.13	Fat, Pretreat, Ankom- Acid Hydrolysis (%)	10	10	3.825	0.6198	0.6014	0.2122	0.6377	15.72%	5.55%	16.67%	3.005
015.43	Aluminum, ICP, Microwave (ppm)	9	7	132.0	20.84	12.01	2.307	12.23	8.69%	1.67%	8.85%	5.301
017.43	Boron, ICP, Microwave (ppm)	9	8	8.578	0.7775	0.7633	0.2092	0.7915	8.90%	2.44%	9.23%	3.783
019.00	Calcium, Ox-Mn04 Vol. (%)	5	5	1.952	0.1805	0.1788	0.0353	0.1822	9.16%	1.81%	9.34%	5.163
019.08	Calcium, EDTA (%)	12	11	1.981	0.1615	0.0809	0.0194	0.0832	4.17%	1.00%	4.29%	4.287

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
019.31	Calcium, AAS, Dry ash (%)	18	16	1.891	0.1905	0.0816	0.0530	0.0973	4.21%	2.74%	5.02%	1.837
019.41	Calcium, ICP, Dry ash (%)	22	21	1.915	0.0672	0.0598	0.0385	0.0711	3.13%	2.01%	3.72%	1.848
019.42	Calcium, ICP, Open vessel (%)	20	19	1.960	0.1888	0.1262	0.0587	0.1392	6.54%	3.04%	7.21%	2.372
019.43	Calcium, ICP, Microwave (%)	31	28	1.970	0.0909	0.0720	0.0422	0.0835	3.64%	2.13%	4.22%	1.979
021.41	Cobalt, ICP, Dry ash (ppm)	6	6	2.712	0.2180	0.2087	0.0893	0.2270	7.69%	3.29%	8.37%	2.541
021.43	Cobalt, ICP, Microwave (ppm)	9	8	2.941	0.1508	0.1470	0.0478	0.1546	5.00%	1.62%	5.25%	3.234
022.31	Copper, AAS, Dry ash (ppm)	7	6	12.08	1.535	1.520	0.3079	1.551	12.59%	2.55%	12.84%	5.037
022.41	Copper, ICP, Dry ash (ppm)	13	12	11.26	1.840	1.696	0.8821	1.912	15.30%	7.96%	17.25%	2.168
022.42	Copper, ICP, Open vessel (ppm)	21	21	12.18	0.9001	0.7401	0.7245	1.036	6.08%	5.95%	8.50%	1.429
022.43	Copper, ICP, Microwave (ppm)	26	24	11.91	0.9786	0.9200	0.4445	1.022	7.76%	3.75%	8.61%	2.299
025.31	Iron, AAS, Dry ash (ppm)	8	7	335.5	68.57	16.47	6.953	17.88	5.28%	2.23%	5.73%	2.571
025.41	Iron, ICP, Dry ash (ppm)	19	19	306.6	25.83	25.02	9.058	26.61	8.16%	2.95%	8.68%	2.938
025.42	Iron, ICP, Open vessel (ppm)	19	17	283.6	49.37	38.60	12.56	40.59	13.43%	4.37%	14.12%	3.232
025.43	Iron, ICP, Microwave (ppm)	28	26	313.2	27.70	20.68	7.502	22.00	6.68%	2.42%	7.10%	2.933
027.31	Magnesium, AAS, Dry ash (%)	8	8	0.3854	0.0227	0.0192	0.0172	0.0258	4.98%	4.46%	6.69%	1.499
027.41	Magnesium, ICP, Dry ash (%)	18	18	0.3710	0.0158	0.0140	0.0102	0.0174	3.78%	2.76%	4.68%	1.698
027.42	Magnesium, ICP, Open vessel (%)	21	21	0.3770	0.0217	0.0184	0.0163	0.0245	4.88%	4.31%	6.51%	1.509
027.43	Magnesium, ICP, Microwave (%)	29	28	0.3876	0.0284	0.0196	0.0178	0.0264	5.09%	4.62%	6.88%	1.487
028.31	Manganese, AAS, Dry ash (ppm)	8	7	244.5	43.58	15.72	11.30	19.36	6.83%	4.91%	8.41%	1.713
028.41	Manganese, ICP, Dry ash (ppm)	16	16	215.9	28.93	26.84	15.28	30.88	12.43%	7.08%	14.31%	2.021
028.42	Manganese, ICP, Open vessel (ppm)	22	20	242.9	23.80	15.35	13.91	20.71	6.45%	5.84%	8.71%	1.490
028.43	Manganese, ICP, Microwave (ppm)	27	26	233.9	21.17	14.48	13.10	19.53	6.26%	5.66%	8.44%	1.490
031.01	Phosphorus, Photometric (%)	34	31	0.7853	0.0357	0.0223	0.0118	0.0252	2.82%	1.48%	3.19%	2.146
031.41	Phosphorus, ICP, Dry ash (%)	21	20	0.7907	0.0325	0.0255	0.0143	0.0293	3.21%	1.80%	3.68%	2.043
031.42	Phosphorus, ICP, Open vessel (%)	21	21	0.8160	0.0519	0.0482	0.0271	0.0553	5.91%	3.32%	6.78%	2.043
031.43	Phosphorus, ICP, Microwave (%)	32	30	0.8197	0.0510	0.0427	0.0203	0.0473	5.24%	2.50%	5.80%	2.325
032.31	Potassium, AAS, Dry ash (%)	8	8	0.9478	0.0797	0.0766	0.0307	0.0826	8.09%	3.24%	8.71%	2.686
032.41	Potassium, ICP, Dry ash (%)	19	17	0.9462	0.0509	0.0485	0.0133	0.0502	5.10%	1.40%	5.29%	3.788
032.42	Potassium, ICP, Open vessel (%)	20	20	1.002	0.0706	0.0651	0.0383	0.0756	6.50%	3.83%	7.55%	1.971
032.43	Potassium, ICP, Microwave (%)	29	26	0.9662	0.0591	0.0388	0.0188	0.0431	4.04%	1.95%	4.48%	2.297
033.00	Salt as chloride, Sol Cl (%)	15	14	1.631	0.1802	0.0853	0.0272	0.0896	5.11%	1.63%	5.36%	3.295
033.01	Salt as chloride, Poten Cl (%)	27	25	1.723	0.0385	0.0368	0.0159	0.0401	2.14%	0.92%	2.33%	2.521
033.99	Salt, Miscellaneous (%)	7	7	1.454	0.2956	0.2933	0.0523	0.2979	20.18%	3.60%	20.50%	5.700
035.31	Sodium, AAS, Dry ash (%)	7	6	0.5228	0.3119	0.0074	0.0065	0.0098	1.82%	1.60%	2.42%	1.513
035.41	Sodium, ICP, Dry ash (%)	18	16	0.4239	0.0140	0.0060	0.0107	0.0123	1.41%	2.52%	2.89%	1.145
035.42	Sodium, ICP, Open vessel (%)	17	15	0.4342	0.0490	0.0167	0.0130	0.0212	3.91%	3.05%	4.96%	1.624
035.43	Sodium, ICP, Microwave (%)	24	22	0.4373	0.0308	0.0180	0.0123	0.0218	4.19%	2.86%	5.07%	1.771
036.42	Sulfur, ICP, Open vessel (%)	19	17	0.2952	0.0131	0.0093	0.0069	0.0116	3.18%	2.35%	3.95%	1.684
036.43	Sulfur, ICP, Microwave (%)	19	18	0.3123	0.0273	0.0253	0.0144	0.0291	8.10%	4.60%	9.31%	2.024
037.31	Zinc, AAS, Dry ash (ppm)	8	7	605.0	220.5	82.19	14.81	83.52	15.45%	2.79%	15.70%	5.638
037.41	Zinc, ICP, Dry ash (ppm)	17	15	483.8	39.31	22.63	12.26	25.74	4.77%	2.59%	5.43%	2.100
037.42	Zinc, ICP, Open vessel (ppm)	21	19	497.6	44.77	32.44	21.51	38.92	6.64%	4.40%	7.97%	1.810
037.43	Zinc, ICP, Microwave (ppm)	31	27	503.9	38.39	31.59	11.54	33.63	6.30%	2.30%	6.70%	2.913
038.42	Molybdenum, ICP, Open vessel (ppm)	7	6	6.787	1.225	0.3483	0.6835	0.7671	5.47%	10.73%	12.04%	1.122
038.43	Molybdenum, ICP, Microwave (ppm)	9	8	5.861	1.288	0.6129	0.4020	0.7330	9.83%	6.45%	11.76%	1.823
042.00	Chloride, Titrimetric (%)	6	5	1.204	0.2282	0.0870	0.0330	0.0931	7.79%	2.96%	8.33%	2.819

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
106.02	Vitamin A, LC (KU / kg)	8	8	21.57	4.291	3.404	3.696	5.024	15.78%	17.14%	23.30%	1.360
109.02	Vitamin E, LC (IU / kg)	10	8	107.4	22.96	10.60	3.517	11.17	10.54%	3.50%	11.10%	3.175
120.00	Alanine, Post-col Ninhydrin Der (%)	18	16	0.7236	0.0366	0.0197	0.0082	0.0213	2.70%	1.12%	2.92%	2.606
120.05	Alanine, Pre-col AQC Der (%)	8	8	0.7231	0.0671	0.0647	0.0255	0.0695	8.94%	3.53%	9.61%	2.722
121.00	Arginine, Post-col Ninhydrin Der (%)	18	17	0.9107	0.0383	0.0377	0.0093	0.0389	4.14%	1.03%	4.27%	4.161
121.05	Arginine, Pre-col AQC Der (%)	8	7	0.9516	0.0771	0.0720	0.0197	0.0747	7.67%	2.10%	7.95%	3.786
122.00	Aspartic, Post-col Ninhydrin Der (%)	18	17	1.255	0.0835	0.0276	0.0204	0.0344	2.17%	1.60%	2.70%	1.682
122.05	Aspartic, Pre-col AQC Der (%)	8	7	1.254	0.1262	0.1139	0.0390	0.1204	8.92%	3.05%	9.43%	3.087
124.00	Cysteine/Cystine, PAO Post-col Ninhydrin Der (%)	18	17	0.2555	0.0146	0.0108	0.0063	0.0125	4.27%	2.50%	4.94%	1.981
124.05	Cysteine/Cystine, PAO Pre-col AQC Der (%)	8	7	0.2580	0.0538	0.0463	0.0085	0.0470	17.18%	3.15%	17.46%	5.545
125.00	Glutamic, Post-col Ninhydrin Der (%)	18	17	2.561	0.0787	0.0645	0.0113	0.0654	2.53%	0.44%	2.57%	5.817
125.05	Glutamic, Pre-col AQC Der (%)	8	7	2.532	0.2385	0.2425	0.0733	0.2533	9.49%	2.87%	9.91%	3.458
126.00	Glycine, Post-col Ninhydrin Der (%)	18	15	0.6356	0.0222	0.0146	0.0050	0.0155	2.32%	0.79%	2.45%	3.098
126.05	Glycine, Pre-col AQC Der (%)	8	7	0.6680	0.0807	0.0380	0.0102	0.0393	5.91%	1.59%	6.12%	3.851
127.00	Histidine, Post-col Ninhydrin Der (%)	18	16	0.3652	0.0271	0.0202	0.0059	0.0210	5.61%	1.63%	5.84%	3.582
127.05	Histidine, Pre-col AQC Der (%)	8	7	0.3782	0.0690	0.0349	0.0061	0.0355	9.80%	1.72%	9.94%	5.792
128.00	Isoleucine, Post-col Ninhydrin Der (%)	18	18	0.5215	0.0300	0.0296	0.0072	0.0304	5.67%	1.37%	5.83%	4.254
128.05	Isoleucine, Pre-col AQC Der (%)	8	7	0.5313	0.0903	0.0311	0.0105	0.0328	5.53%	1.87%	5.84%	3.123
129.00	Leucine, Post-col Ninhydrin Der (%)	18	17	1.115	0.0480	0.0373	0.0097	0.0386	3.33%	0.87%	3.44%	3.967
129.05	Leucine, Pre-col AQC Der (%)	8	8	1.145	0.1191	0.1182	0.0196	0.1199	10.33%	1.72%	10.47%	6.103
130.00	L-Lysine, Post-col Ninhydrin Der (%)	18	15	0.6338	0.0263	0.0205	0.0042	0.0209	3.25%	0.67%	3.32%	4.975
130.05	L-Lysine, Pre-col AQC Der (%)	8	7	0.6473	0.1261	0.0452	0.0435	0.0627	7.46%	7.17%	10.34%	1.444
131.00	Methionine, PAO Post-col Ninhydrin Der (%)	18	16	0.2117	0.0134	0.0096	0.0065	0.0116	4.58%	3.08%	5.52%	1.791
131.05	Methionine, PAO Pre-col AQC Der (%)	8	7	0.2494	0.0756	0.0371	0.0118	0.0389	16.42%	5.24%	17.24%	3.287
132.00	Phenylalanine, Post-col Ninhydrin Der (%)	18	16	0.6679	0.0295	0.0193	0.0090	0.0213	2.89%	1.35%	3.19%	2.360
132.05	Phenylalanine, Pre-col AQC Der (%)	8	6	0.6656	0.0646	0.0268	0.0092	0.0283	4.17%	1.43%	4.40%	3.083
133.00	Proline, Post-col Ninhydrin Der (%)	18	17	0.8555	0.0419	0.0416	0.0076	0.0422	4.86%	0.89%	4.94%	5.541
133.05	Proline, Pre-col AQC Der (%)	8	8	0.8803	0.0620	0.0614	0.0125	0.0626	6.97%	1.42%	7.11%	5.009
134.00	Serine, Post-col Ninhydrin Der (%)	18	16	0.6608	0.0292	0.0186	0.0084	0.0204	2.80%	1.26%	3.07%	2.440
134.05	Serine, Pre-col AQC Der (%)	8	7	0.7083	0.0582	0.0299	0.0120	0.0323	4.34%	1.74%	4.67%	2.678
135.00	Threonine, Post-col Ninhydrin Der (%)	18	16	0.5017	0.0149	0.0133	0.0047	0.0141	2.66%	0.94%	2.82%	2.990
135.05	Threonine, Pre-col AQC Der (%)	8	8	0.5102	0.0602	0.0596	0.0118	0.0608	11.69%	2.30%	11.91%	5.171
136.00	Tryptophan, Alka-Hydrol Post-col Ninhydrin Der (%)	5	5	0.1732	0.0246	0.0243	0.0052	0.0248	14.01%	2.99%	14.33%	4.785
136.03	Tryptophan, Alka-Hydrol + IS RP LC FI (%)	8	8	0.1799	0.0066	0.0039	0.0076	0.0085	2.15%	4.23%	4.74%	1.122
137.00	Tyrosine, Post-col Ninhydrin Der (%)	14	14	0.4296	0.0675	0.0670	0.0118	0.0680	15.60%	2.75%	15.84%	5.761
137.05	Tyrosine, Pre-col AQC Der (%)	7	6	0.4515	0.0271	0.0269	0.0036	0.0272	5.96%	0.79%	6.02%	7.583
138.00	Valine, Post-col Ninhydrin Der (%)	18	15	0.6588	0.0468	0.0377	0.0057	0.0381	5.78%	0.87%	5.85%	6.715
138.05	Valine, Pre-col AQC Der (%)	8	7	0.6525	0.1292	0.1287	0.0161	0.1297	19.72%	2.47%	19.88%	8.063
400.01	Water Activity, Aqualab chilled mirror (Units)	8	8	0.6040	0.0107	0.0103	0.0040	0.0110	1.70%	0.66%	1.83%	2.749
520.43	Chromium, Total (Cr), ICP, Microwave (ppm)	8	8	6.492	0.7763	0.7576	0.2393	0.7945	11.67%	3.69%	12.24%	3.320
539.43	Nickel, ICP, Microwave (ppm)	5	5	2.585	0.4038	0.4014	0.0627	0.4062	15.53%	2.42%	15.72%	6.484

Notes: Precision Calculations provided for methods with 5 or more labs contributing to calculations.