

Detailed Typical Analysis: (on a DM Basis)

Assessed by the Canadian Feed Research Centre, University of Saskatchewan

Dry Matter	94.6	Phosphorus, %	0.93
Crude Protein, %	37.13	Magnesium, %	0.57
Sol CP, % of CP	15.48	Potassium, %	1.14
Rumen Deg % of CP	47.8	Sulfur, %	0.65
Dig of CP, %	76.2	Sodium	0.01
ADF, %	20.58	Chloride	0.08
ADICP, % of DM	5.28	Iron, mg/kg	197
aNDF, %	26.45	Manganese, mg/kg	69.5
aNDFom, %	25.47	Zinc, mg/kg	57.3
NDFICP, % of DM	6.94	Copper, mg/kg	6
NDF 30 hr Deg, % of NDF	35.54	Molybdenum, mg/kg	1.12
Ether extract, %	14.93	DCAD, meq/100g	-13.2
Lignin, %	10.58	Methionine, % of CP	1.99
Sugar, etoh, %	4.67	Lysine, % of CP	4.93
Starch, %	1.28	Threonine, % of CP	4.10
Non fiber CHO2, %	23.37	Palmitic, % of FA	5.06
Non structural CHO2, %	5.95	Oleic Acid, % of FAs	59.58
TDN, %	86.78	Linoleic, % of FAs	20.86
NEL, Mcal/kg	2.20	Linolenic acid, % of FAs	8.42
NEm, Mcal/kg	2.34	Palmitic, % of meal DM	0.68
NEg, Mcal/kg	1.633	Oleic acid, % of meal DM	8.05
Ash, %	6.44	Linoleic, % of meal DM	2.82
Calcium, %	0.73	Linolenic acid, % of meal DM	1.14

TABLE 1. Summary table of chemical composition (DM basis) of Milligan BIO-MEAL with comparisons

Assessed by the Canadian Feed Research Centre, University of Saskatchewan				
	BIO-MEAL	CC Expeller	CC Meal	Soy Meal
Dry Matter	94.6	95.98	88.0	87.6
Crude Protein, %	37.13	38.95	42.0	53.0
Sol CP, % of CP	15.48			23.0
Rumen Deg % of CP	47.8	40.90	56.5	59.5
Dig of CP, %	76.2			
ADF, %	20.58	19.0	18.6	8.6
ADICP, % of DM	5.28			2.1
aNDF, %	26.45	30.49	29.0	13.6
aNDFom, %	25.47			
NDFICP, % of DM	6.94			7.46
NDF 30 hr Deg, % of NDF	35.54			80.76
Ether extract, %	14.93	12.44	3.60	2.74
Lignin, %	10.58		6.61	1.28
Sugar, etoh, %	4.67			10.8
Starch, %	1.28		0.49	1.52
Non fiber CHO2, %	23.37			26.49
Non structural CHO2, %	5.95			14.27
TDN, %	86.78			80.43
NEL, Mcal/kg	2.20			1.87
NEm, Mcal/kg	2.34			1.96
NEg, Mcal/kg	1.633			1.31
Ash, %	6.44	7.9	7.3	7.27
Calcium, %	0.73	0.71	0.76	0.38
Phosphorus, %	0.93	1.09	1.17	0.72
Magnesium, %	0.57		0.61	0.31
Potassium, %	1.14		1.28	2.31
Sulfur, %	0.65		0.72	0.40
Sodium	0.01		0.08	0.05
Chloride	0.08		0.11	0.28
Iron, mg/kg	197		184	201
Manganese, mg/kg	69.5		66	40.0
Zinc, mg/kg	57.3		53	52
Copper, mg/kg	6		5.3	15
Molybdenum, mg/kg	1.12		1.6	4.7
Selenium			1.3	0.48

TABLE 1. Summary table of chemical composition (DM basis) of Milligan BIO-MEAL with comparisons, Continued

Assessed by the Canadian Feed Research Centre, University of Saskatchewan				
	BIO- MEAL	CC Expeller	CC Meal	Soy Meal
DCAD, meq/100g	-13.2			27.5
Methionine, % of CP	1.99	1.93	1.93	1.36
Lysine, % of CP	4.93	5.93	5.66	6.22
Threonine, % of CP	4.10	3.96	3.97	3.96
Palmitic, % of FA	5.06	3.5	3.5	10.1
Oleic Acid, % of FAs	59.58	62.3	61.9	19.6
Linoleic, % of FAs	20.86	20.1	16.9	58.0
Linolenic acid, % of FAs	8.42	8.3	8.4	8.7
Palmitic, % of meal DM	0.68	0.39	0.001	0.003
Oleic acid, % of meal DM	8.05	7.01	0.020	0.005
Linoleic, % of meal DM	2.82	2.26	0.006	0.015
Linolenic acid, % of meal DM	1.14	0.93	0.003	0.002

Table 2. Milligan BIO-MEAL Fatty Acid Profile (% of total fatty acid)

Assessed by the Canadian Feed Research Centre, University of Saskatchewan			
Fatty Acids	% of total Fatty Acid	Fatty Acids	% of total Fatty Acid
C14:0	0.08	Gondoic (20:1n9)	0.67
Myristoleic (9c-14:1)	0.03	C20:2	0.36
C15:0	0.04	Homo-a-linolenic (20:3n3)	0.00
C15:1n5	0.00	Homo-g-Linolenic (C20:3n6)	0.04
Palmitic (16:0)	5.06	Arachidonic [20:4n6]	0.04
Palmitoleic (9c-16:1)	0.46	EPA (20:5n3)	0.00
Margaric (17:0)	0.08	C21:0	0.10
10c-17:1	0.17	Behenoic (22:0)	0.40
Stearic (18:0)	1.73	Erucic [22:1n9]	0.04
Elaidic (9t-18:1)	0.07	C22:2n6	0.03
Oleic (9c-18:1)	59.85	Clupanodonic (22:5n3)	0.00
Vaccenic (11c-18:1)	0.00	C23:0	0.00
Linoelaidic (18:2t)	0.00	Lignoceric (24:0)	0.20
Linoleic (18:2n6)	20.86	Nervonic (24:1n9)	0.19
Linolenic (18:3n3)	8.42		
g-Linolenic [C18:3n6]	0.04		
Arachidic (20:0)	0.60		

Table 3. Milligan BIO-MEAL Amino Acids Profile					
Assessed by the Canadian Feed Research Centre, University of Saskatchewan					
Amino Acids (%)	w/w % as is	% of CP	Amino Acids (%)	w/w % as is	% of CP
Total Amino Acids (%)	30.63	89.0	Valine (%)	1.79	5.19
Taurine (%)	0.07	0.20	Methionine (%)	0.69	1.99
Hydroxyproline (%)	0.31	0.89	Isoleucine (%)	1.43	4.16
Aspartic Acid (%)	2.23	6.48	Tyrosine (%)	0.96	2.79
Threonine (%)	1.41	4.09	Phenylalanine (%)	1.39	4.03
Serine (%)	1.31	3.80	Hydroxylysine (%)	0.21	0.60
Glutamic Acid (%)	5.61	16.31	Ornithine (%)	0.04	0.10
Proline (%)	2.04	5.94	Lysine (%)	1.70	4.93
Lanthionine (%)	0.01	0.04	Histidine (%)	0.84	2.44
Glycine (%)	1.65	4.80	Arginine (%)	1.78	5.18
Alanine (%)	1.51	4.37	Tryptophan (%)	0.41	1.18
Cysteine (%)	0.90	2.60			
Leucine (%)	2.37	6.87			

Table 4. Chemical Composition of Milligan BIO-MEAL (as received) for Poultry & Swine			
Assessed by the Canadian Feed Research Centre, University of Saskatchewan			
Nutrients	Units	Nutrients	Units
Moisture, %	5.4	Sodium, %	0.01
Crude Protein, %	35.12	Magnesium, %	0.54
Crude Fat (Ether Extract), %	14.12	Potassium, %	1.08
Linoleic Acid, %	2.67	Sulfur, %	0.61
Linolenic Acid, (%) (omega-3)	1.08	Available Lysine, %	1.56
Lignin	10	Glucosinolates umol/g (Canola Feeding Guide, 6 th edition)	3.57
Neutral Detergent Fiber, %	25.02		
Acid Detergent Fibre, %	19.46		
Free Sugars, %	4.4		
Starch, %	1.21		
Ash, %	6.1		
Calcium, %	0.69		
Total Phosphorus, %	0.95		
Phytate P, %	0.77		
Non-phytate P, %	0.18		

Table 5. Amino acid content (% as received and % of CP) and availability in Poultry & Swine

Assessed by the Canadian Feed Research Centre, University of Saskatchewan						
			POULTRY		SWINE	
Amino Acid	%	%of CP	Ileal digestibility (%)	% digestible AA content	Ileal digestibility (%)	% digestible AA content
Crude Protein	35.12					
Methionine	0.69	1.99	78.0	0.54	86.0	0.59
Cystine	0.90	2.60	73.5	0.66	80.0	0.72
Met + Cys	1.59	4.59	75.0	1.19	83.0	1.32
Lysine	1.70	4.93	78.0	1.33	74.0	1.26
Threonine	1.41	4.09	68.9	0.97	72.0	1.02
Tryptophan	0.41	1.18	78.0	0.32	77.0	0.32
Arginine	1.51	4.37	86.2	1.30	86.0	1.30
Isoleucine	1.43	4.16	71.6	1.02	77.0	1.10
Leucine	2.37	6.87	76.2	1.81	81.0	1.92
Valine	1.79	5.19	75.7	1.36	75.0	1.34
Histidine	0.84	2.44	83.5	0.70	83.0	0.70
Phenylalanine	1.39	4.03	81.1	1.13	81.0	1.13

Table 6. Calculated available energy values (kcal/kg) for Milligan BIO-MEAL (14.12% fat, 5.4 % as received basis)

Assessed by the Canadian Feed Research Centre, University of Saskatchewan		
Animal		Value
Poultry	AMEn (kcal/g)	2507
Swine	NE (kcal/kg)	2659