15 Nutrient Composition of Feeds

Data in Table 15-1 were compiled from commercial laboratories, literature data, *Nutrient Requirements of Beef Cattle* (National Research Council, 1996), and unpublished data provided by university researchers. When commercial laboratory data disagreed greatly with published data (>1.5 SD from the mean), the published data were used. The table includes means, standard deviations, and the number of samples (N) used to generate those statistics. Users should examine the standard deviation and N before using the mean value as an estimate of the nutritional content of a specific feed sample. Means derived from a large N will better reflect the total population. Means with a large standard deviation may represent the total population but may be a poor estimate for a specific sample.

All energy values in Table 15-1 were calculated from the mean nutrient data for each entry. Values for ME and NE_L assume the diet has 74 percent TDN. Neutral detergent insoluble crude protein (NDICP) and acid detergent insoluble crude protein (ADICP) are not used directly to formulate diets but are used to calculate energy. Ether extract values represent the total lipid content of a feed but is a poor index of the true fat content of many feeds. The concentration of fatty acids in a feed is a measure of the true fat content and should replace the ether extract assay (Sukhija and Palmquist, 1988). Ether extract values were retained in this edition because of the limited availability of fatty acid data for most feedstuffs. In some cases, data were used that were derived with different analytic techniques, especially neutral detergent fiber (NDF) because other data were not available (see section on Analytic Procedures in chapter 13). Lignin and ash concentrations are used only to estimate energy values and the majority of lignin values were determined using sulfuric acid acid detergent lignin (ADL). Fiber concentrations are not presented for animal-based feedstuffs because the values have little meaning. Concentrations of macro and trace minerals are included in the table; however, before using these values, examine the standard deviations. Soil concentrations of minerals are highly variable; geographic differences exist for the mineral concentrations of many feeds. For most trace minerals, the standard deviation is high. The use of mean values for copper, iron, manganese, selenium, and zinc is discouraged. Concentrations of molybdenum are provided only in reference to copper availability.

For a very limited number of entries, the concentrations of certain nutrients (NDICP, ADICP, and some minerals) were estimated. Values in the table with no N were estimated. Generally the estimates were from a larger population (e.g., the sulfur concentration for normal corn silage also was used for immature corn silage). For some hay crop forages, values for a specific maturity class were estimated from the *all samples* entries. For some forage classifications, estimates of NDICP and ADICP were calculated from the mean value as a percent of crude protein (CP) for the *all sample* entries and multiplying that value by the mean CP for the specific entry. Data for ground corn (dry and high moisture) was used for cracked dry and high moisture corn. Data for dry rolled sorghum was used for steam-flaked sorghum.

Common names were used to designate feeds. In contrast with previous editions, data for different species of cool season grasses (C-3) were combined into a single classification (Grasses, Cool Season). The classification was simplified because nutrient composition does not vary greatly among different species (Cherney et al., 1993). Similarly, common legumes (alfalfa, clover, trefoil) were combined into a single classification (Legumes, Forage). The standard maturity classifications were eliminated because data from commercial labs and published data often do not include specific maturity designations. Within the cool season grasses and forage legume categories entries were broken into low NDF, medium NDF, and high NDF. Typically less mature forages contain lower NDF concentrations, but growing conditions can alter that relationship. The NDF concentrations, included in each entry are in the table. Because of the widespread use of mixed legume and grass forages, entries were included for this type of forage. The difference in hemicellulose

concentrations between legumes and grasses was used to partition feeds into mostly (>70 percent) grass mixtures, mixtures with approximately equal amount grass and legume, and mostly (>70 percent) legume mixtures. Maturity classification for mixed forages was also based on NDF concentrations. Maturity of corn silage was estimated from dry matter content. Generally, as corn plants mature, dry matter increases (Wiersma et al., 1993).

REFERENCES

Cherney, D. J., J. H. Cherney, and R. F. Lucey. 1993. In vitro digestion kinetics and quality of perennial grasses as influenced by forage maturity. J. Dairy Sci. 76:790–797.

National Research Council. 1996. Nutrient Requirements of Beef Cattle. 7th rev. ed. National Academy Press, Washington, D.C.

Sukhija, P. S., and D. L. Palmquist. 1988. Rapid method for determination of total fatty acid content and composition of feedstuffs and feces. J. Agric. Food Chem. 36:1202–1206.

Wiersma, D. W., P. R. Carter, K. A. Albrecht, and J. G. Coors. 1993. Kernel milkline stage and corn forage yield, quality, and dry matter content. J. Prod. Agr. 6:94-99.

TABLE 15-1 Nutrient Composition and Variability of Some Feedstuffs Commonly Fed to Dairy Cattle (all values on a dry basis)

Entry No.	Feed Name/Description	International Feed No.	TDN-1X %	TDN Equation Class	PAF	DE-1X Mcal/kg	ME-3X Mcal/kg	NEL-3X Mcal/kg	NEL-4X Mcal/kg	NEM-3X Mcal/kg	NEG-3X Mcal/kg	DM %	CP %	NDICP %	ADICP %	Ether Extract %	NDF %	ADF %	Lignin %	Ash %
	ALFALFA *Medicago sativa*	Also see LEGUMES, FORAGE																		
1	Meal, 17% CP	1-00-023	56.4	Forage	1.00	2.60	1.96	1.19	1.11	1.27	0.70	90.3	19.2	3.1	2.4	2.5	41.6	32.8	7.6	11.0
		N										222	221	3	70	54	221	220	70	84
		SD										1.4	3.3	0.3	0.1	0.6	7.1	5.1	1.2	2.3
	ALMOND																			
2	Hulls	4-00-359	58.4	Conc	1.00	2.53	1.89	1.14	1.07	1.22	0.65	86.9	6.5	2.3	1.8	2.9	36.8	28.7	14.9	6.1
		N										23	32	4	3	23	30	30	11	16
		SD										5.6	2.5	0.3	0.4	2.0	11.2	8.5	3.0	0.5
	APPLE																			
3	Pomace, wet	4-25-450	57.1	Conc	1.00	2.48	1.86	1.12	1.06	1.18	0.62	35.9	7.7	3.7	3.1	5.0	52.5	43.2	15.4	2.6
		N										65	65	3	4	22	65	65	5	16
		SD										29.4	3.8	0.9	0.7	1.9	9.5	6.6	2.6	1.1
	BAKERY BYPRODUCT																			
4	Byproduct meal	4-00-466	93.5	Conc	1.04	4.09	3.37	2.21	2.09	2.32	1.61	84.7	12.5	2.3	1.1	9.5	13.9	6.5	1.6	3.8
		N										192	188	5	3	136	133	132	6	71
		SD										10.7	3.6	1.1	0.6	6.2	10.7	6.5	0.4	1.6
5	Bread, waste	4-00-466	89.3	Conc	1.04	3.99	3.25	2.09	1.98	2.21	1.52	68.3	15.0	0.6	0.5	2.2	8.9	3.1	0.1	2.8
		N										72	70	1	2	2	66	66	1	10
		SD										10.7	2.7				10.5	4.3		1.4
6	Cereal byproduct	4-00-466	87.6	Conc	1.04	3.79	3.07	1.97	1.88	2.12	1.45	88.5	9.1	3.2	1.2	3.5	10.0	3.9	2.6	3.2
		N										61	61	5	6	36	53	56	5	21
		SD										10.2	2.1	1.4	0.7	2.9	6.5	3.1	2.1	1.3
7	Cookie byproduct	4-24-852	95.0	Conc	1.04	4.11	3.40	2.24	2.12	2.33	1.63	90.1	9.7	1.9	0.5	10.6	12.7	6.5	2.6	3.0
		N										37	36	4	4	25	33	33	4	5
		SD										4.3	3.1	1.0	0.3	4.5	8.9	5.3	2.1	1.1
	BARLEY																			
8	Grain, rolled	4-00-528	82.7	Conc	1.04	3.64	2.92	1.86	1.76	2.02	1.36	91.0	12.4	1.8	0.5	2.2	20.8	7.2	1.9	2.9
		N										823	795	60	61	247	331	727	69	257
		SD										3.5	2.1	1.1	0.4	0.6	8.6	2.8	1.1	0.8
9	Malt sprouts	5-00-545	66.4	Conc	1.00	3.06	2.38	1.49	1.40	1.61	1.01	90.5	20.1	3.7	1.1	2.3	47.0	21.8	3.4	7.4
		N										42	40	2	2	21	37	37	2	9
		SD										5.5	3.5			0.4	7.6	4.9		1.3
10	Silage, headed	3-00-512	60.2	Forage	1.00	2.68	2.03	1.24	1.17	1.33	0.76	35.5	12.0	1.6	0.9	3.5	56.3	34.5	5.6	7.5
		N										504	528	25	265	68	387	528	84	166
		SD										9.6	2.6	0.6	0.4	0.7	7.0	4.9	1.5	2.1
	BEET, SUGAR																			
11	Pulp, dried	4-00-669	69.1	Conc	1.00	3.03	2.36	1.47	1.38	1.60	0.99	88.3	10.0	5.5	0.6	1.1	45.8	23.1	1.6	7.3
		N										198	181	18	5	122	151	161	11	54
		SD										9.4	1.1	1.3	0.3	0.4	6.6	3.6	0.9	1.9
	BERMUDAGRASS *Cynodon dactlyon*																			
12	Coastal, hay, early head	1-20-900	52.9	Forage	1.00	2.35	1.73	1.02	0.96	1.08	0.52	87.1	10.4	4.0	0.9	2.7	73.3	36.8	6.5	8.1
		N										326	325	7	12	2	41	41	10	34
		SD										0.9	2.3	0.7	0.2		5.1	4.6	1.5	1.9
13	Tifton-85, hay, 3-4 wk growth	IFN	55.3	Forage	1.00	2.49	1.86	1.12	1.05	1.19	0.63	87.3	13.7	5.3	1.2	2.7	76.9	36.2	5.4	6.5
		N										5	5				5	5	2	2
		SD										2.3	1.9				1.5	1.5		
	BLOOD																			
14	Meal, ring dried	5-00-380	76.4	Animal	1.00	4.35	3.58	2.33	2.21	2.49	1.76	90.2	95.5	NA	NA	1.2	NA	NA	NA	2.5
		N										97	84			47				31
		SD										4.0	8.3			2.0				1.4
15	Meal, batch dried (composition data from ring-dried)		65.9	Animal	1.00	3.76	3.04	1.95	1.84	2.11	1.41	90.2	95.5	NA	NA	1.2	NA	NA	NA	2.5
	BLUEGRASS *Poa pratensis*	See GRASSES, COOL SEASON																		
	BREWERS GRAINS																			
16	Dried	5-12-024	71.3	Conc	1.00	3.38	2.69	1.71	1.62	1.84	1.21	90.7	29.2	9.1	3.5	5.2	47.4	22.2	5.0	4.3
		N										698	688	32	30	88	221	88	34	138
		SD										3.5	4.0	3.7	0.9	1.6	6.6	3.9	2.7	0.9
17	Wet	5-00-517	71.6	Conc	1.00	3.38	2.69	1.71	1.62	1.84	1.21	21.8	28.4	9.3	2.9	5.2	47.1	23.1	4.7	4.9
		N										1309	1127	23	29		685	686	35	110
		SD										5.0	4.0	3.9	0.9		6.8	3.8	0.9	1.1
	BROME, SMOOTH *Bromus inermis*	See GRASSES, COOL SEASON																		
	CANARYGRASS, REED *Phalaris arundianacea*	See GRASSES, COOL SEASON																		
	CANOLA																			
18	Seed	5-08-109	127.4	Conc	1.00	5.60	4.92	3.52	3.36	3.28	2.38	89.9	20.5	3.4	1.3	40.5	17.8	11.6	2.7	4.6
		N										1	1			1	1	1	1	1
		SD																		

(continues)

TABLE 15-1 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	TDN-1X %	TDN Equation Class	PAF	DE-1X Mcal/kg	ME-3X Mcal/kg	NEL-3X Mcal/kg	NEL-4X Mcal/kg	NEM-3X Mcal/kg	NEG-3X Mcal/kg	DM %	CP %	NDICP %	ADICP %	Ether Extract %	NDF %	ADF %	Lignin %	Ash %
19	Meal, mech. extracted	5-03-870	69.9	Conc	1.00	3.44	2.75	1.76	1.66	1.88	1.25	90.3	37.8	6.3	2.4	5.4	29.8	20.5	9.5	7.4
		N										230	230	16	19	71	81	82	18	27
		SD										1.1	1.1	2.5	0.7	5.5	6.6	5.1	4.3	1.2
	CHOCOLATE																			
20	Byproduct		102.7	Conc	1.04	4.46	3.77	2.56	2.43	2.56	1.81	95.2	11.9	0	0	20.5	23.8	15.7	3.2	2.1
		N										21	21	1		16	19	19	1	15
		SD										3.1	7.2			8.8	15.8	12.6		2.0
	CITRUS																			
21	Pulp dried	4-01-237	79.8	Conc	1.00	3.44	2.76	1.76	1.66	1.89	1.25	85.8	6.9	0.4	0.3	4.9	24.2	22.2	0.9	7.2
		N										380	469	3	3	39	99	99	7	35
		SD										8.5	0.6	0.3	0.1	1.3	3.5	4.5	0.1	4.2
	CLOVER, LADINO *Trifolium pratense*	See LEGUMES, FORAGE																		
	CLOVER, RED *Trifolium repens*	See LEGUMES, FORAGE																		
	CORN, YELLOW																			
22	Cobs	1-28-234	54.2	Conc	1.00	2.31	1.68	0.99	0.93	1.04	0.48	90.8	3.0	1.7	0.8	0.6	86.2	42.2	5.9	2.2
		N										5	7	1	1	4	6	4	3	2
		SD										0.3	0.3			0.1	7.3	3.5		
	Distillers grains with solubles, dried																			
23		5-28-236	79.5	Conc	1.00	3.72	3.03	1.97	1.87	2.07	1.41	90.2	29.7	8.6	5.0	10.0	38.8	19.7	4.3	5.2
		N										892	879	37	392	464	493	710	46	134
		SD										1.8	3.3	3.4	2.6	3.4	7.8	4.6	2.8	1.1
24	Gluten feed, dried	5-28-243	74.1	Conc	1.00	3.43	2.73	1.73	1.64	1.87	1.24	89.4	23.8	3.6	1.4	3.5	35.5	12.1	2.0	6.8
		N										131	186	9	22	68	122	142	10	25
		SD										1.2	5.7	1.5	2.0	1.1	6.8	3.0	1.1	1.5
25	Gluten meal, dried	5-28-242	84.4	Conc	1.00	4.43	3.66	2.38	2.25	2.54	1.79	86.4	65.0	3.6	3.0	2.5	11.1	8.2	1.5	3.3
		N										66	57	11	13	42	39	52	10	20
		SD										10.1	7.8	2.7	2.0	1.1	10.1	4.7	0.8	1.2
26	Grain, cracked, dry	4-02-854	85.0	Conc	0.95	3.69	2.98	1.91	1.80	2.05	1.39	88.1	9.4	0.7	0.3	4.2	9.5	3.4	0.9	1.5
		N																		
		SD																		
27	Grain, ground, dry	4-02-854	88.7	Conc	1.00	3.85	3.12	2.01	1.90	2.16	1.48	88.1	9.4	0.7	0.3	4.2	9.5	3.4	0.9	1.5
												1448	4457	66	50	659	1239	1204	157	567
												3.1	1.3	0.3	0.2	1.0	2.3	1.0	0.4	0.5
28	Grain, steam-flaked	4-02-854	91.7	Conc	1.04	3.97	3.24	2.09	1.98	2.24	1.55	88.1	9.4	0.7	0.3	4.2	9.5	3.4	0.9	1.5
29	Grain, rolled, high moisture	4-28-265	88.5	Conc	1.00	3.84	3.11	2.01	1.90	2.15	1.48	71.8	9.2	0.6	0.3	4.3	10.3	3.6	0.9	1.5
		N																		
		SD																		
30	Grain, ground, high moisture	4-28-265	91.5	Conc	1.04	3.96	3.23	2.09	1.97	2.23	1.55	71.8	9.2	0.6	0.3	4.3	10.3	3.6	0.9	1.5
												4845	4761	61	38	1357	4729	4728	1123	2544
												5.1	0.9	0.3	0.3	0.7	2.7	1.6	0.2	0.6
31	Grain and cob, dry, ground	4-02-849	83.5	Conc	1.00	3.62	2.91	1.86	1.76	2.00	1.35	89.2	8.6	0.9	0.4	3.9	21.5	8.0	1.6	1.7
		N										198	190	4	6	68	183	167	37	83
		SD										3.0	1.6	0.1	0.3	1.4	12.5	4.3	0.5	0.5
32	Grain and cob, high moisture, ground	4-26-240	86.6	Conc	1.04	3.74	3.03	1.94	1.83	2.09	1.42	67.1	8.4	0.7	0.3	3.9	21.0	9.4	1.4	1.7
		N										2708	2684	49	33	622	2675	2673	802	1381
		SD										6.8	1.0	0.3	0.1	1.8	6.9	3.7	0.4	0.3
33	Hominy	4-02-887	83.1	Conc	1.00	3.64	2.94	1.88	1.78	2.02	1.37	88.5	11.9	1.5	0.5	4.2	21.1	6.2	1.7	2.7
		N										364	358	15	20	228	315	309	15	118
		SD										1.5	2.4	0.5	0.2	2.0	5.5	1.8	0.5	1.1
34	Silage, immature <25% DM	3-28-247	65.6	Forage	1.00	2.87	2.21	1.36	1.28	1.48	0.89	23.5	9.7	1.4	0.9	2.5	54.1	34.1	3.5	4.8
		N										70	70		9	37	70	70	8	69
		SD										2.0	2.2		0.1	1.1	4.6	4.1	0.3	2.1
35	Silage, normal 32-38% DM	3-28-248	68.8	Forage	0.94	2.99	2.33	1.45	1.38	1.57	0.97	35.1	8.8	1.3	0.8	3.2	45	28.1	2.6	4.3
		N										1033	1033	667	77	75	1033	1033	79	1027
		SD										1.7	1.2	0.5	0.2	0.5	5.3	3.3	0.8	1.0
36	Silage, mature >40% DM	3-28-249	65.4	Forage	0.87	2.84	2.19	1.35	1.28	1.46	0.87	44.2	8.5	1.3	0.9	3.2	44.5	27.5	3.1	4.0
		N										705	705		41	41	705	705	33	704
		SD										3.9	3.9		0.2	0.7	5.9	3.9	0.7	1.3
	COTTON SEED																			
37	Whole seeds with lint	5-01-614	77.2	Conc	1.00	3.55	2.91	1.94	1.83	1.96	1.31	90.1	23.5	2.4	1.9	19.3	50.3	40.1	12.9	4.2
		N										1059	1124	71	4	27	953	1024	76	193
		SD										4.6	2.6	1.2	0.1	1.4	5.8	4.4	3.2	2.1

(continues)

TABLE 15-1 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	TDN-1X %	TDN Equation Class	PAF	DE-1X Mcal/kg	ME-3X Mcal/kg	NEL-3X Mcal/kg	NEL-4X Mcal/kg	NEM-3X Mcal/kg	NEG-3X Mcal/kg	DM %	CP %	NDICP %	ADICP %	Ether Extract %	NDF %	ADF %	Lignin %	Ash %
38	Hulls	1-01-599	34.3	Conc	1.00	1.51	0.95	0.48	0.44	0.39	-0.13	89.0	6.2	3.0	1.1	2.5	85.0	64.9	22.5	2.8
		N										135	134	10	1	84	106	108	10	75
		SD										3.5	3.6	0.3		1.3	5.9	5.0	3.0	0.5
39	Meal, solvent, 41% CP	5-01-630	66.4	Conc	1.00	3.40	2.70	1.71	1.61	1.84	1.23	90.5	44.9	3.3	1.8	1.9	30.8	19.9	7.6	6.7
		N										180	158	7	8	113	47	58	3	44
		SD										1.9	4.1	0.9	0.5	2.2	9.0	5.4		0.7
	FATS AND OILS																			
40	Calcium soaps	IFN	163.5	Fat	1.00	6.83	6.27	5.02	4.80	5.02	3.45	95.3	0	0	0	84.5	0	0	0	15.5
		N																		
		SD																		
41	Hydrolyzed tallow fatty acids	IFN	176.3	Fat	1.00	7.37	6.76	5.41	5.17	5.41	3.72	99.8	0	0	0	99.2	NA	NA	NA	0
		N																		
		SD																		
42	Partially hydrogenated tallow	IFN	96.6	Fat+C	1.00	4.05	3.72	2.97	2.84	2.97	2.04	100.0	0	0	0	99.5	NA	NA	NA	0
		N																		
		SD																		
43	Tallow	IFN	147.4	Fat+C	1.00	6.17	5.66	4.53	4.33	4.53	3.12	99.8	0	0	0	99.8	NA	NA	NA	0
		N																		
		SD																		
44	Vegetable oil	4-05-077	184.0	Fat+C	1.00	7.70	7.07	5.65	5.41	5.65	3.89	100.0	0	0	0	99.9	0	0	0	0
		N																		
		SD																		
	FEATHERS																			
45	Hydrolyzed meal		72.8	Animal	1.00	4.05	3.32	2.15	2.03	2.29	1.60	93.3	92	NA	NA	4.6	NA	NA	NA	3.5
		N										19								
		SD										2.2								
46	Hydrolyzed meal with some viscera	5-13-540	80.1	Animal	1.00	4.32	3.58	2.36	2.24	2.47	1.73	91.5	85.0	NA	NA	8.8	NA	NA	NA	5.5
		N										38	39			24				12
		SD										6.1	9.8			5.6				2.1
	FESCUE *Festuca sp.*	See GRASSES, COOL SEASON																		
	FISH BYPRODUCTS																			
47	Anchovy, meal, mech.	5-01-985	76.1	Animal	1.00	4.16	3.42	2.22	2.10	2.34	1.65	92.0	71.2	NA	NA	4.6	NA	NA	NA	16.0
		N										67	58			36				47
		SD										1.2	2.2			1.6				1.5
48	Menhaden, meal, mech.	5-02-009	79.9	Animal	1.00	4.25	3.52	2.33	2.20	2.44	1.70	91.2	68.5	NA	NA	10.4	NA	NA	NA	19.7
		N										135	147			143				113
		SD										3.3	4.4			2.0				2.4
	GRASSES, COOL SEASON																			
49	Pasture, intensively managed	2-02-260	66.6	Forage	1.00	3.14	2.46	1.54	1.45	1.67	1.06	20.1	26.5	3.9	1.1	2.7	45.8	25.0	2.1	9.8
		N										13	13		11	1	13	13	1	13
		SD										1.7	5.6		0.4		7.5	5.8		1.2
50	Hay, all samples	1-02-250	56.3	Forage	1.00	2.49	1.86	1.12	1.05	1.19	0.63	88.1	10.6	3.8	1.1	2.6	64.4	39.5	6.4	7.0
		N										4767	4702	53	182	542	4695	4695	1010	1791
		SD										1.1	3.1	1.3	0.5	0.7	6.2	4.0	1.1	1.5
51	Hay, immature <55% NDF	1-02-212	63.1	Forage	1.00	2.88	2.22	1.37	1.29	1.48	0.89	84.0	18.0	3.4	1.3	3.3	49.6	31.4	3.9	9.2
		N										31	44	1	38	26	44	44	16	34
		SD										4.9	3.3		0.3	2.0	5.0	4.1	1.6	1.1
52	Hay, mid maturity 55-60% NDF	1-02-243	59.7	Forage	1.00	2.67	2.02	1.23	1.16	1.33	0.75	83.8	13.3	3.9	1.2	2.5	57.7	36.9	4.3	8.8
		N										51	55	2	35	30	55	55	14	50
		SD										3.7	3.4	0.2	0.3	0.6	1.6	3.3	1.2	1.6
53	Hay, mature <60% NDF	1-02-244	56.0	Forage	1.00	2.48	1.85	1.11	1.04	1.18	0.62	84.4	10.8	7.4	1.1	2.0	69.1	41.6	5.9	7.0
		N										402	413	1	61	51	413	413	19	399
		SD										3.9	2.8		0.3	0.6	5.1	4.0	1.6	1.7
54	Silage, all samples	3-02-222	55.7	Forage	1.00	2.49	1.86	1.12	1.05	1.19	0.63	36.5	12.8	3.3	1.5	3.1	60.7	40.3	6.9	8.1
		N										4377	4401	68	4388	456	4390	4390	1079	988
		SD										11	3.7	1.3	0.8	0.9	7.5	5.4	1.8	2.1
55	Silage, immature <55% NDF	3-02-217	60.4	Forage	1.00	2.75	2.10	1.29	1.21	1.39	0.81	36.2	16.8	4.3	1.1	2.8	51.0	32.9	4.8	9.9
		N										35	35		5	23	35	35	17	34
		SD										10.5	3.0		0.4	0.3	3.4	3.5	1.2	1.8
56	Silage, mid maturity 55-60% NDF	3-02-218	56.0	Forage	1.00	2.56	1.92	1.16	1.09	1.25	0.68	42.0	16.8	4.3	1.1	2.4	58.2	35.2	6.8	8.7
		N										41	41		26	6	41	41	5	41
		SD										13.5	3.8		0.4	0.3	1.3	3	1.8	1.5
57	Silage, mature >60% NDF	3-02-219	53.2	Forage	1.00	2.39	1.76	1.05	0.98	1.11	0.55	38.7	12.7	3.2	1.4	3.0	66.6	41.1	7.4	8.0
		N										135	135		110	6	135	135	5	135
		SD										10.6	2.9		0.5	1.3	3.9	3.7	1.5	1.8

(continues)

TABLE 15-1 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	TDN-1X %	TDN Equation Class	PAF	DE-1X Mcal/kg	ME-3X Mcal/kg	NEL-3X Mcal/kg	NEL-4X Mcal/kg	NEM-3X Mcal/kg	NEG-3X Mcal/kg	DM %	CP %	NDICP %	ADICP %	Ether Extract %	NDF %	ADF %	Lignin %	Ash %
	GRASS-LEGUME MIXTURES Predominantly grass (17-22% Hemicellulose)																			
58	Hay, immature <51% NDF	1-02-275	62.1	Forage	1.00	2.84	2.18	1.34	1.26	1.45	0.87	84.3	18.4	4.2	1.3	2.4	49.6	31.5	4.0	9.2
		N										21	21		7	7	21	21	7	21
		SD										2.3	3.1		0.3	0.5	1.8	2.0	1.0	1.2
59	Hay, mid maturity 51-57% NDF	1-02-277	59.5	Forage	1.00	2.71	2.07	1.26	1.19	1.36	0.78	87.3	17.4	4.2	1.4	2.6	55.1	36.4	4.5	9.5
		N										155	155	52	81	25	155	155	27	155
		SD										5.3	2.9	0.7	0.3	0.6	1.5	2.1	1.1	1.7
60	Hay, mature >57% NDF	1-02-280	57.0	Forage	1.00	2.55	1.92	1.16	1.09	1.24	0.67	84.7	13.3	4.4	1.3	2.3	62.5	42.1	5.5	7.9
		N										149	149	3	68	52	149	149	51	149
		SD										3.5	3.3	0.1	0.8	0.4	3.6	3.5	1.0	1.4
61	Silage, immature <51% NDF	3-02-302	60.9	Forage	1.00	2.78	2.13	1.31	1.23	1.42	0.79	47.1	18.0	3.1	1.2	2.9	49.9	31.8	5.0	9.1
		N										18	18		16	1	18	18	1	18
		SD										14.7	2.5		0.4		1.0	1.3		1.3
62	Silage, mid maturity 51-57% NDF	3-02-265	56.7	Forage	1.00	2.60	1.96	1.19	1.11	1.29	0.73	44.5	17.6	3.1	1.4	2.9	54.5	35.7	6.5	9.5
		N										95	95		88	6	95	95	6	95
		SD										12.6	3.0		0.5	0.6	1.6	1.9	0.8	1.6
63	Silage, mature >57% NDF	3-02-266	53.6	Forage	1.00	2.43	1.80	1.08	1.01	1.15	0.59	38.5	15.4	3.1	1.8	2.6	61.7	42.2	6.9	9.0
		N										166	166		159	9	166	166	9	166
		SD										12.6	2.4		0.7	0.4	3.7	3.5	1.0	1.5
	Mixed Grass and Legume (12-15% Hemicellulose)																			
64	Hay, immature <47% NDF	1-02-275	62.1	Forage	1.00	2.86	2.20	1.35	1.27	1.47	0.88	83.1	19.7	3.9	1.3	2.5	45.4	30.8	5.1	8.8
		N										42	42		19	16	42	42	16	42
		SD										4.0	1.9		0.3	0.3	1.5	1.6	0.8	0.9
65	Hay, mid maturity 47-53% NDF	1-02-277	58.8	Forage	1.00	2.70	2.05	1.25	1.17	1.35	0.77	85.3	18.4	4.6	1.5	2.3	50.8	35.8	5.7	9.3
		N										184	184	5	90	61	184	184	61	184
		SD										3.6	2.2	0.5	0.3	0.4	1.8	1.9	0.8	1.4
66	Hay, mature >53% NDF	1-02-280	54.1	Forage	1.00	2.49	1.86	1.12	1.05	1.19	0.63	89.7	18.2	4.4	1.7	2.0	56.0	40.1	7.0	9.9
		N										233	233	121	179	35	233	233	42	233
		SD										4.9	2.2	0.7	0.6	0.4	2.4	2.6	1.1	1.6
67	Silage, immature <47% NDF	3-02-302	59.5	Forage	1.00	2.76	2.10	1.29	1.21	1.39	0.81	45.9	20.3	3.1	1.4	2.3	45.3	30.8	5.8	9.8
		N										45	45		41	8	45	45	8	45
		SD										10.3	3.7		0.4	0.3	1.3	1.5	1.4	1.7
68	Silage, mid maturity 47-53% NDF	3-02-265	57.7	Forage	1.00	2.66	2.01	1.23	1.15	1.32	0.74	44.1	19.1	3.5	1.6	2.5	50.4	35.4	5.9	10.1
		N										171	171	1	164	29	171	171	30	171
		SD										12.3	2.3		0.5	0.5	1.8	2.1	1.6	1.5
69	Silage, mature <47% NDF	3-02-266	53.6	Forage	1.00	2.46	1.83	1.09	1.02	1.16	0.60	42.8	17.4	3.5	2.0	2.3	57.4	42.1	7.1	9.6
		N										255	255		255	33	255	255	33	255
		SD										13.5	2.3		0.8	0.3	2.9	2.9	1.0	1.3
	Predominantly Legume (10-13% Hemicellulose)																			
70	Hay, immature <44% NDF	1-02-275	60.7	Forage	1.00	2.81	2.15	1.32	1.24	1.43	0.85	83.8	20.5	2.9	1.5	2.0	41.7	30.5	5.8	9.2
		N										157	157		120	119	157	157	119	157
		SD										2.4	2.4		1.2	0.4	1.9	1.8	0.8	1.4
71	Hay, mid maturity 44-50% NDF	1-02-277	57.8	Forage	1.00	2.66	2.02	1.23	1.15	1.32	0.75	84.2	19.1	3.1	1.6	2.0	47.2	35.4	6.7	9.1
		N										296	296		210	195	296	296	195	296
		SD										2.3	2.0		0.3	0.4	1.7	1.8	1.0	1.2
72	Hay, mature >50% NDF	1-02-280	53.9	Forage	1.00	2.47	1.84	1.10	1.03	1.18	0.61	84.3	17.2	3.6	1.7	1.7	53.6	41.5	8.1	8.7
		N										134	134	1	85	72	134	134	71	134
		SD										2.5	2.4		0.5	0.3	3.3	3.5	1.3	1.4
73	Silage, immature <44% NDF	3-02-302	57.1	Forage	1.00	2.65	2.00	1.22	1.14	1.31	0.74	43.2	20.0	2.8	1.7	2.2	42.2	31.1	6.7	11.5
		N										193	193		191	165	193	193	165	193
		SD										9.9	2.2		0.4	0.1	1.9	2.0	1.2	2.1
74	Silage, mid maturity 44-50% NDF	3-02-265	55.3	Forage	1.00	2.55	1.92	1.16	1.09	1.24	0.67	43.3	19.0	2.7	1.7	2.1	47.0	35.4	7.3	10.8
		N										505	505		496	314	505	505	314	504
		SD										9.9	2.3		0.5	0.4	1.7	1.6	1.2	1.6

(continues)

TABLE 15-1 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	TDN-1X %	TDN Equation Class	PAF	DE-1X Mcal/kg	ME-3X Mcal/kg	NEL-3X Mcal/kg	NEL-4X Mcal/kg	NEM-3X Mcal/kg	NEG-3X Mcal/kg	DM %	CP %	NDICP %	ADICP %	Ether Extract %	NDF %	ADF %	Lignin %	Ash %
75	Silage, mature >50% NDF	3-02-266	51.8	Forage	1.00	2.39	1.77	1.05	0.99	1.12	0.56	42.9	18.3	2.7	2.0	2.0	53.7	41.6	8.4	10.2
		N										339	339	2	337	87	339	339	92	339
		SD										11.6	2.4	0.5	0.8	0.4	3.0	3.1	1.8	1.8
	LEGUMES, FORAGE																			
76	Pasture, intensively managed	2-29-431	66.3	Forage	1.00	3.13	2.46	1.54	1.45	1.66	1.05	21.4	26.5	3.8	1.1	3.7	33.1	23.9	5.4	10.0
		N										17	24	2	2	2	24	24	4	11
		SD										6.5	5.6				7.8	6.4	0.9	1.4
77	Hay, all samples	1-20-648	58.9	Forage	1.00	2.73	2.08	1.27	1.19	1.37	0.79	87.8	20.2	2.4	1.6	2.1	39.6	31.2	7.0	10.0
		N										12292	12218	237	825	1434	12178	12195	3692	4527
		SD										1.4	2.6	0.9	0.4	0.5	6.3	4.6	0.9	1.2
78	Hay, immature <40% NDF	1-07-792	62.1	Forage	1.00	2.89	2.23	1.38	1.30	1.49	0.90	84.2	22.8	2.7	1.6	2.1	36.3	28.6	5.9	9.5
		N										181	210		210	125	210	210	50	159
		SD										3.3	2.1		0.3	0.5	2.4	2.6	2.2	1.3
79	Hay, mid maturity 40- 46% NDF	1-07-788	59.1	Forage	1.00	2.74	2.09	1.28	1.20	1.38	0.80	83.9	20.8	2.5	1.6	2.0	42.9	33.4	6.4	9.4
		N										268	296		296	214	296	296	107	262
		SD										3.2	2.3		0.3	0.4	1.2	2.0	1.0	1.1
80	Hay, mature >46% NDF	1-07-789	54.7	Forage	1.00	2.51	1.88	1.13	1.06	1.21	0.65	83.8	17.8	2.1	1.7	1.6	50.9	39.5	7.3	9.2
		N										218	237		237	155	237	237	56	205
		SD										2.9	2.6		0.4	0.4	3.7	3.6	1.1	1.6
81	Silage, all samples	3-07-796	56.6	Forage	1.00	2.62	1.98	1.20	1.13	1.29	0.72	39.1	20.0	2.9	1.6	3.1	45.7	37.0	8.1	10.4
		N										8555	8576	255	8567	1325	8567	8562	2770	5183
		SD										10.5	3.0	1.1	0.6	0.7	6.5	4.8	1.8	1.7
82	Silage, immature <40% NDF	3-07-795	60.5	Forage	1.00	2.83	2.18	1.34	1.26	1.45	0.86	41.2	23.2	3.4	1.6	2.3	36.7	30.2	6.2	11.1
		N										361	322		189	148	322	322	93	322
		SD										8.6	2.1		0.3	0.4	2.5	2.7	0.9	1.5
83	Silage, mid maturity 40-46% NDF	3-07-797	56.7	Forage	1.00	2.65	2.01	1.22	1.15	1.32	0.74	42.9	21.9	3.1	1.8	2.2	43.2	35.2	7.3	10.8
		N										884	750	2	250	188	750	750	129	749
		SD										10.0	1.8		0.5	0.3	1.5	2.1	1.2	1.5
84	Silage, mature >46% NDF	3-07-798	53.0	Forage	1.00	2.47	1.84	1.10	1.03	1.18	0.62	42.6	20.3	2.9	2.1	2.1	50.0	40.9	8.4	10.3
		N										754	731		121	99	731	731	74	731
		SD										10.2	1.8		0.6	0.4	3.0	3.1	1.3	1.6
85	LINSEED (Flax) meal, solvent	5-30-288	65.4	Conc	1.00	3.19	2.51	1.57	1.48	1.48	1.10	90.3	32.6	7.9	1.1	1.7	36.1	22.1	8.3	6.5
		N										6	6	1	2	2	6	6	1	1
		SD										1.5	4.9				5.7	3.1		
	MEAT																			
86	Meal, rendered	5-09-323	79.6	Animal	1.00	4.05	3.35	2.21	2.10	2.29	1.59	93.9	57.6	NA	NA	12.7	NA	NA	NA	22.9
		N										78	66			32				12
		SD										4.0	7.6			3.8				5.6
87	Meat and bone, rendered	5-00-388	61.9	Animal	1.00	3.19	2.54	1.63	1.54	1.71	1.09	94.0	54.2	NA	NA	10.4	NA	NA	NA	30.4
		N										62	62			54				13
		SD										4.9	5.6			2.8				7.5
	MOLASSES																			
88	Beet sugar	4-00-668	82.9	Conc	1.04	3.60	2.88	1.84	1.73	1.99	1.33	77.9	8.5	0.0	0.0	0.2	0.1	0.1	0.0	11.4
		N										21	12			3	3	3		9
		SD										1.7	1.1			0.1				1.3
89	Sugarcane	4-04-696	81.0	Conc	1.04	3.48	2.78	1.76	1.66	1.91	1.28	74.3	5.8	0.0	0.0	0.2	0.4	0.2	0.0	13.3
		N										84	64			6	1	1		52
		SD										3.3	2.1			0.2				2.3
	OATS																			
90	Grain, rolled	4-03-309	78.5	Conc	1.04	3.47	2.78	1.77	1.67	1.90	1.26	90.0	13.2	1.8	0.3	5.1	30.0	14.6	4.9	3.3
		N										176	308		2	145	120	173	6	104
		SD										2.0	1.8			0.9	10.5	5.6	2.5	0.5
91	Hay, headed	1-09-099	55.9	Forage	1.00	2.46	1.83	1.10	1.03	1.17	0.61	91.9	9.1	1.3	0.6	2.2	58.0	36.4	6.5	8.5
		N										433	422	7	8	54	419	419	9	22
		SD										1.2	2.9	0.3	0.4	0.6	6.3	4.5	1.4	4.0
92	Silage, headed	3-21-843	56.8	Forage	1.00	2.54	1.91	1.15	1.08	1.23	0.66	34.6	12.9	2.1	1.0	3.4	60.6	38.9	5.5	9.8
		N										626	634	5	630	53	632	631	135	182
		SD										10.6	1.6	0.4	0.5	0.8	5.7	4.2	1.4	2.3
	ORCHARDGRASS *Dactylis glomerata*	see GRASSES, COOL SEASON																		
	PEANUT																			
93	Meal, solvent	5-08-605	74.8	Conc	1.00	3.85	3.12	2.00	1.90	2.14	1.48	92.3	51.8	5.8	1.1	1.4	21.4	13.5	4.6	5.8
		N										55	51	2	2	25	15	15	1	11
		SD										1.7	4.4			2.6	5.7	4.4		1.5

(continues)

TABLE 15-1 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	TDN-1X %	TDN Equation Class	PAF	DE-1X Mcal/kg	ME-3X Mcal/kg	NEL-3X Mcal/kg	NEL-4X Mcal/kg	NEM-3X Mcal/kg	NEG-3X Mcal/kg	DM %	CP %	NDICP %	ADICP %	Ether Extract %	NDF %	ADF %	Lignin %	Ash %
	POTATO																			
94	Byproduct meal	4-03-775	80.7	Conc	1.00	3.51	2.84	1.85	1.75	1.94	1.30	35.4	10.5	5.2	2.3	10.8	22.1	16.5	2.3	12.8
		N										79	79	2	2	28	79	79	2	22
		SD										23.1	8.4			7.8	14.3	11.0		7.4
	RICE																			
95	Bran	4-03-928	84.8	Conc	1.00	3.76	3.09	2.05	1.94	2.10	1.43	90.6	15.5	3.7	0.4	15.2	26.1	13.1	4.6	10.4
		N										72	86	11	3	77	59	51	30	69
		SD										1.3	2.2	1.7	0.1	4.2	6.8	4.3	1.4	1.9
	RYE, ANNUAL																			
96	Silage, vegetative	3-21-853	60.0	Forage	1.00	2.72	2.08	1.28	1.20	1.37	0.79	29.7	16.1	1.9	0.9	3.8	57.8	34.9	4.5	9.6
		N										787	1175	31	504	63	1174	1173	169	844
		SD										8.8	3.1	1.4	0.4	1.2	6.3	4.9	1.6	3.9
	RYEGRASS *Lolium sp.*	see GRASSES, COOL SEASON																		
	SAFFLOWER																			
97	Meal, solvent	5-04-110	52.5	Conc	1.00	2.60	1.96	1.19	1.11	1.27	0.70	93.5	29.0	2.0	1.2	2.4	53.8	39.1	14.5	4.7
		N										5	5	1	1	3	5	5	1	1
		SD										0.3	0.2				2.9	1.6		
	SORGHUM, GRAIN TYPE																			
98	Grain, dry rolled	4-04-380	80.6	Conc	0.92	3.53	2.83	1.80	1.70	1.95	1.30	88.6	11.6	2.8	1.0	3.1	10.9	5.9	1.1	2.0
		N										438	437	2	2	90	61	62	2	74
		SD										3.4	1.8			0.8	5.0	2.7		0.6
99	Grain, steam-flaked	4-04-380	89.4	Conc	1.04	3.91	3.17	2.04	1.93	2.20	1.51	88.6	11.6	2.8	1.0	3.1	10.9	5.9	1.1	2.0
100	Silage	3-22-371	56.7	Forage	1.00	2.48	1.85	1.11	1.04	1.18	0.62	28.8	9.1	2.4	1.2	2.9	60.7	38.7	6.5	7.5
		N										1160	1168	18	581	78	864	1162	144	181
		SD										10.7	2.6	1.0	0.6	0.7	8.2	5.9	1.4	2.9
	SORGHUM, SUDAN TYPE																			
101	Hay	1-04-480	54.4	Forage	1.00	2.39	1.77	1.05	0.98	1.11	0.56	86.5	9.4	2.8	1.2	2.3	64.8	40.0	6.0	8.7
		N										487	726	7		48	717	717	130	172
		SD										1.2	2.2	0.5		0.6	5.2	4.1	1.3	2.2
102	Silage	3-04-499	54.4	Forage	1.00	2.41	1.79	1.07	1.00	1.13	0.57	28.8	10.8	2.4	1.2	3.6	63.3	40.7	5.9	10.9
		N										438	140	1	138	14	139	139	32	37
		SD										9.2	3.2		0.4	1.0	7.2	5.1	1.5	3.2
	SOYBEAN																			
103	Hulls	1-04-560	67.3	Conc	1.00	3.01	2.34	1.46	1.37	1.58	0.98	90.9	13.9	3.5	1.0	2.7	60.3	44.6	2.5	4.8
		N										130	138	18	16	77	88	87	24	45
		SD										1.9	4.6	0.5	0.3	1.4	7.4	5.1	2.5	0.7
104	Meal, expellers, 45% CP	5-12-820	88.5	Conc	1.00	4.35	3.61	2.38	2.25	2.49	1.76	89.6	46.3	9.6	0.4	8.1	21.7	10.4	1.5	5.5
		N										546	546	16	3	473	70	70	16	20
		SD										2.5	3.2	5.9	0.1	3.2	8.0	2.8	0.8	0.9
105	Meal, nonenzymatically browned		82.9	Conc	1.00	4.17	3.41	2.21	2.09	2.37	1.66	89.0	50.0	27.0	1.6	2.3	29.7	9.5	3.7	6.8
		N										2	14	2	2	8	14	14	2	8
		SD										0.1	1.6	4.9	0.8	0.3	6.2	1.9	0.6	0.6
106	Meal, solvent, 44% CP	5-20-637	80.0	Conc	1.00	4.05	3.31	2.13	2.02	2.29	1.59	89.1	49.9	0.7	0.4	1.6	14.9	10.0	0.7	6.6
		N										11	111		44	87	2	3		66
		SD										1.2	1.2		0.2	0.7	1.3	0.1		0.6
107	Meal, solvent, 48% CP	5-20-638	81.4	Conc	1.00	4.16	3.41	2.21	2.09	2.37	1.66	89.5	53.8	0.7	0.4	1.1	9.8	6.2	0.5	6.4
		N										561	549	21		41	248	248	8	119
		SD										1.9	2.1	0.2		0.4	5.6	3.0	0.5	0.7
108	Seeds, whole	5-04-610	101.0	Conc	1.00	4.77	4.05	2.75	2.62	2.76	1.97	90.0	39.2	2.3	0.6	19.2	19.5	13.1	1.2	5.9
		N										51	48	2	3	12	27	27	1	7
		SD										6.7	5.4		0.3	4.5	9.2	7.0		0.4
109	Seeds, whole roasted	5-04-597	98.8	Conc	1.00	4.72	4.00	2.72	2.58	2.73	1.95	91.0	43.0	6.1	2.0	19.0	22.1	14.7	3.1	5.0
		N										413	410	18	4	52	128	128	22	32
		SD										2.8	3.8	4.8	0.9	4.4	6.0	3.3	1.5	0.5
110	Silage, early maturity	3-04-579	59.9	Forage	1.00	2.73	2.09	1.29	1.21	1.37	0.79	40.4	17.4	2.5	1.4	5.7	46.6	36.9	6.5	12.2
		N										18	20		17	2	20	20	3	3
		SD										17.6	5.1		0.7		6.0	4.0	0.5	
	SUNFLOWER																			
111	Meal, solvent	5-30-032	59.9	Conc	1.00	2.90	2.24	1.38	1.30	1.49	0.92	92.2	28.4	5.5	1.4	1.4	40.3	30.0	9.5	7.7
		N										47	48	3	3	36	16	16	3	20
		SD										1.4	5.0		0.4	2.3	6.6	6.4		0.4
112	Oil seeds, whole	5-08-530	122.3	Conc	1.00	5.37	4.71	3.38	3.22	3.13	2.27	91.8	19.2	2.9	1.9	41.9	24.0	16.7	6.0	5.1
		N										13	15	1	1	4	1	2	1	5
		SD										2.5	4.2			3.5				1.5
	TIMOTHY *Phleum pratense*	See GRASSES, COOL SEASON																		
	TREFOIL, BIRDSFOOT *Lotus corniculatus*	See LEGUMES, FORAGE																		

(continues)

TABLE 15-1 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	TDN-1X %	TDN Equation Class	PAF	DE-1X Mcal/kg	ME-3X Mcal/kg	NEL-3X Mcal/kg	NEL-4X Mcal/kg	NEM-3X Mcal/kg	NEG-3X Mcal/kg	DM %	CP %	NDICP %	ADICP %	Ether Extract %	NDF %	ADF %	Lignin %	Ash %
	TOMATO																			
113	Pomace	5-05-042	65.5	Conc	1.00	2.99	2.37	1.52	1.43	1.56	0.96	24.7	19.3	8.0	3.8	13.3	60.0	47.6	13.3	5.5
		N										4	22	1	2	4	4	4	3	3
		SD										20.1	4.8		0.1	4.9	5.8	2.8	10.8	1.9
	TRITICALE																			
114	Silage, headed	3-26-208	57.2	Forage	1.00	2.57	1.94	1.18	1.10	1.25	0.69	32.0	13.8	2.2	1.0	3.8	59.7	39.6	5.8	9.7
		N										107	107	2	86	16	107	107	18	41
		SD										10.9	4.0		0.8	0.6	8.3	5.7	3.4	3.8
	WHEAT																			
115	Bran	4-05-190	71.5	Conc	1.00	3.23	2.55	1.61	1.52	1.74	1.12	89.1	17.3	2.8	1.4	4.3	42.5	15.5	3.0	6.3
		N										103	81		8	64	22	22	1	43
		SD										1.3	1.1		0.3	0.8	8.4	5.5		1.6
116	Grain, rolled	4-13-245	86.6	Conc	1.04	3.83	3.10	1.99	1.88	2.15	1.47	89.4	14.2	1.7	0.2	2.3	13.4	4.4	1.7	2.0
		N										215	165	5	5	55	61	91	2	39
		SD										2.6	2.3	0.7	0.1	1.1	6.2	3.6		0.3
117	Hay, headed	1-05-170	52.7	Forage	1.00	2.33	1.71	1.01	0.94	1.06	0.51	86.8	9.4	1.1	0.8	1.7	61.1	38.1	8.7	6.7
		N										121	120	7	17	9	116	116	5	10
		SD										1.5	3.8	0.2	0.1	0.4	9.7	7.3	2.6	1.5
118	Middlings	4-05-205	73.3	Conc	1.00	3.33	2.64	1.67	1.58	1.80	1.18	89.5	18.5	2.8	0.5	4.5	36.7	12.1	4.2	5.0
		N										293	245	26	30	211	146	158	34	87
		SD										1.4	2.1	0.4	0.1	1.3	7.5	2.7	0.6	0.8
119	Silage, early head	3-21-865	57.2	Forage	1.00	2.55	1.91	1.16	1.08	1.24	0.67	33.3	12.0	1.5	1.0	3.2	59.9	37.6	5.8	8.6
		N										459	471	30	397	46	471	470	121	211
		SD										8.9	3.0	0.8	0.4	1.1	7.4	4.9	1.5	2.6
120	Straw	1-05-175	47.5	Forage	1.00	2.04	1.44	0.82	0.76	0.83	0.29	92.7	4.8	2.1	1.4	1.6	73.0	49.4	8.8	7.6
		N										131	161	8	8	37	107	109	9	64
		SD										1.9	1.9	0.2	0.3	0.6	7.1	6.4	0.9	2.8
	WHEY																			
121	Wet, cattle	4-08-134	80.3	Animal	1.00	3.63	2.92	1.86	1.76	1.96	1.41	20.8	14.6	NA	NA	0.7	NA	NA	NA	9.8
		N										73	68			62				16
		SD										26.2	14.1			0.9				2.7

TABLE 15-2a. Nitrogen Fractions, RUP Digestibility, and Amino Acids of Feedstuffs

Entry No.	Feed Name/ Description	International Feed No.	Feed Type	CP %	NDICP %	ADICP %	N Fractions (% CP) A	B	C	Kd (%/h) of B	Example RUP (%CP) DMI = 2.0% BW Forage = 25% DMI	DMI = 4.0% BW Forage = 50% DMI	RUP Digest %	Arg %CP	His %CP	Ile %CP	Leu %CP	Lys %CP	Met %CP	Cys %CP	Phe %CP	Thr %CP	Trp %CP	Val %CP	TEAA %CP	Lys %EAA	Met %EAA
	ALFALFA																										
1	Meal, 17% CP	1-00-023	Conc	19.2	3.1	2.4	27.8	66.0	6.2	6.7	31.6	40.9	75	4.14	2.16	3.98	7.11	4.34	1.46	1.08	4.89	4.10	1.39	5.03	38.60	11.24	3.78
		N		221	3	70	4	4	3	4				15	15	15	15	15	15	15	15	15	15	15			
		SD		3.3	0.3	0.1	7.2	9.2	3.9	4.0				0.39	0.11	0.21	0.37	0.31	0.08	0.07	0.33	0.14	0.07	0.22			
	ALMOND																										
2	Hulls (N fractions and Kd from canola hulls)	4-00-359	Conc	6.5	2.3	1.8	29.6	35.4	35.0	5.3	50.6	55.7	50	2.23	0.86	2.35	4.05	2.74	0.90	0.71	2.80	2.70	1.00	3.53	23.16	11.83	3.89
		N		32	4	3								7	7	7	7	7	7	7	7	7		7			
		SD		2.5	0.3	0.4								0.28	0.06	0.29	0.32	0.32	0.26	0.08	0.33	0.34		0.38			
	APPLE																										
3	Pomace, wet (N fractions and Kd from citrus pulp, dried)	4-25-450	Conc	7.7	3.7	3.1	41.7	53.3	5.0	7.4	24.2	31.7	80	4.52	1.86	3.13	5.58	3.93	1.38	1.18	3.31	3.04	0.88	4.11	31.74	12.38	4.35
		N		65	3	4								3	3	3	3	3	3	3	3	3	3	3			
		SD		3.8	0.9	0.7								0.03	0.10	0.03	0.05	0.01	0.04	0.04	0.06	0.06	0.04	0.04			
	BAKERY BYPRODUCT																										
4	Byproduct meal (N fractions and Kd from wheat middlings)	4-00-466	Conc	12.5	2.3	1.1	40.3	53.6	6.1	15.2	17.7	23.7	90	4.74	2.61	4.00	7.77	2.91	1.73	2.14	5.44	3.36	1.15	4.42	38.12	7.63	4.54
		N		188	5	3								104	104	104	104	104	104	104	104	104	104	104			
		SD		3.6	1.1	0.6								0.52	0.24	0.25	0.38	0.38	0.16	0.22	0.11	0.19	0.06	0.28			
5	Bread, waste (N fractions and Kd from wheat middlings; amino acids from bakery byproduct meal)	4-00-466	Conc	15.0	0.6	0.5	40.3	53.6	6.1	15.2	17.7	23.7	90	4.74	2.61	4.00	7.77	2.91	1.73	2.14	5.44	3.36	1.15	4.42	38.12	7.63	4.54
		N		70	1	2																					
		SD		2.7																							
6	Cereal byproduct (N fractions, Kd, and amino acids from wheat bran)	4-00-466	Conc	9.1	3.2	1.2	33.7	62.5	3.8	20	14.6	20.7	75	6.84	2.82	3.15	6.16	4.05	1.57	2.10	3.97	3.26	1.37	4.50	37.88	10.75	4.17
		N		61	5	6																					
		SD		2.1	1.4	0.7																					
7	Cookie byproduct (N fractions and Kd from wheat middlings)	4-24-852	Conc	9.7	1.9	0.5	40.3	53.6	6.1	15.2	17.7	23.7	90	4.19	1.77	3.12	7.12	1.71	1.83	1.94	4.78	3.14	0.88	4.58	33.12	5.16	5.53
		N		36	4	4								2	2	2	2	2	2	2	2	2	2	2			
		SD		3.1	1.0	0.3								0.74	0.24	0.16	0.93	0.28	0.45	0.30	0.37	0.32	0.32	0.23			
	BARLEY																										
8	Grain, rolled	4-00-528	Conc	12.4	1.8	0.5	30.2	61.2	8.6	22.7	18.1	23.7	85	5.07	2.30	3.47	6.97	3.63	1.70	2.28	5.11	3.42	1.17	4.90	37.74	9.62	4.50
		N		795	60	61	37	37	37	37				116	116	116	116	116	116	116	116	116	116	116			
		SD		2.1	1.1	0.4	13.5	13.9	4.6	8.9				0.27	0.21	0.14	0.25	0.25	0.09	0.17	0.23	0.13	0.07	0.24			
9	Malt sprouts	5-00-545	Conc	20.1	3.7	1.1	56.0	44.0	0.0	4.5	21.2	27.4	80	4.25	1.84	4.00	6.00	4.38	1.33	1.10	3.20	3.61	0.90	5.38	34.89	12.55	3.81
		N		40	2	2	1	1	1	1				4	4	4	4	4	4	4	4	4	4	4			
		SD		3.5										0.85	0.44	0.31	0.36	0.94	0.13	0.23	0.64	0.32	0.28	0.55			
10	Silage, headed (Amino acids from rye silage)	3-00-512	Wet	12.0	1.6	0.9	56.6	32.9	10.5	5.9	24.3	26.4	65	1.04	1.21	3.45	4.88	2.35	1.16	0.66	3.42	2.51	1.42	4.80	26.42	8.96	4.39
		N		528	25	265	6	6	6	6																	
		SD		2.6	0.6	0.4	29.7	29.9	3.3	2.0																	

	BEET, SUGAR																								
11	Pulp, dried	4-00-669	Conc	10.0	5.5	0.6	4.5	90.5	5.0	2.0	66.2	76.3	80	3.23	2.54	3.18	5.10	4.35	1.24	1.10	2.93	3.38	0.81	4.70	31.46	13.83	3.94
		N		181	18	5	2	2	1	2				11	11	11	11	11	11	11	11	11	11	11			
		SD		1.1	1.3	0.3	4.6	4.6		1.8				0.96	0.36	0.24	0.46	0.59	0.19	0.19	0.20	0.39	0.09	0.50			
	BERMUDAGRASS																								
	(Cynodon dactylon)																								
12	Coastal, hay, early head	1-20-900	Dry	10.4	4.0	0.9	36.7	51.7	11.6	8.1	27.6	29.8	65	3.88	1.63	3.32	6.22	3.49	1.30	1.16	3.92	3.60	1.24	4.51	33.05	10.53	3.93
		N		325	7	12																					
		SD		2.3	0.7	0.2																					
13	Tifton-85, hay, 3-4 wk growth	IFN	Dry	13.7	5.3	1.2	36.7	51.7	11.6	8.1	27.4	29.6	65	3.88	1.63	3.32	6.22	3.49	1.30	1.16	3.92	3.60	1.24	4.51	33.05	10.53	3.93
		N		5																							
		SD		1.9																							
	BLOOD																								
14	Meal, ring dried	5-00-380	Conc	95.5	NA	NA	10.1	60.9	29.0	1.9	70.9	77.5	80	4.38	6.36	1.26	12.82	8.98	1.17	1.28	6.85	4.34	1.59	8.68	56.43	15.91	2.07
		N		84			8	8	5	8				53	53	53	53	53	53	53	53	53	53	53			
		SD		8.3			8.5	39.7	33.3	2.3				0.23	0.35	0.20	0.38	0.34	0.15	0.16	0.31	0.36	0.13	0.33			
15	Meal, batch dried (CP and amino acids from blood meal, ring dried)		Conc	95.5	NA	NA	10.1	60.9	29.0	1.9	70.9	77.5	65	4.38	6.36	1.26	12.82	8.98	1.17	1.28	6.85	4.34	1.59	8.68	56.43	15.91	2.07
		N																									
		SD																									
	BREWERS GRAINS																								
16	Dried	5-12-024	Conc	29.2	9.1	3.5	18.3	64.6	17.1	4.7	47.5	56.6	80	5.77	2.00	3.85	7.85	4.08	1.70	1.85	4.60	3.58	0.98	4.75	39.16	10.42	4.34
		N		688	32	30	14	14	14	14																	
		SD		4.0	3.7	0.9	7.9	13.8	10.3	1.4																	
17	Wet (Trp from brewers grains, dried)	5-00-517	Conc	28.4	9.3	2.9	48.3	42.5	9.2	4.6	29.4	35.4	85	4.47	2.25	3.85	9.61	3.40	1.93	1.96	5.57	3.61	0.98	5.14	40.81	8.33	4.66
		N		1127	23	29	4	4	4	4				4	4	4	4	4	4	4	4	4		4			
		SD		4.0	3.9	0.9	3.3	5.2	3.8	2.3				0.31	0.04	0.21	1.03	0.03	0.06	0.24	0.37	0.08		0.41			
	CANOLA																								
18	Seeds, ground (Amino acids from canola meal)	5-08-109	Conc	20.5	3.4	1.3	35.2	59.5	5.3	20.1	15.5	21.3	50	7.01	2.80	3.83	6.77	5.62	1.87	2.54	4.06	4.42	1.46	4.73	42.56	13.20	4.39
		N		1			2	2	1	2																	
		SD					4.4	0.6		1.7																	
19	Meal, mech. extracted	5-03-870	Conc	37.8	6.3	2.4	23.2	70.4	6.4	10.4	26.6	35.7	75	7.01	2.80	3.83	6.77	5.62	1.87	2.54	4.06	4.42	1.46	4.73	42.56	13.20	4.39
		N		230	16	19	22	22	22	22				58	58	58	58	58	58	58	58	58	58	58			
		SD		1.1	2.5	0.7	5.8	7.0	5.4	3.7				0.46	0.25	0.12	0.32	0.28	0.10	0.19	0.33	0.18	0.12	0.18			
	CHOCOLATE																								
20	Byproduct (N fractions and Kd from molasses, beet sugar)		Conc	11.9	0	0	74.1	25.9	0.0	3.2	14.7	18.1	90	2.25	1.57	3.60	6.52	2.25	1.57	0.90	3.82	3.82	0.67	5.84	31.91	7.05	4.92
		N		21	1									1	1	1	1	1	1	1	1	1	1	1			
		SD		7.2																							
	CITRUS																								
21	Pulp dried	4-01-237	Conc	6.9	0.4	0.3	41.7	53.3	5.0	7.4	24.2	31.7	80	3.39	1.88	2.79	5.01	2.56	1.03	1.38	3.63	2.91	0.76	3.78	27.74	9.23	3.71
		N		469	3	3	1	1	1	1				15	15	15	15	15	15	15	15	15	15	15			
		SD		0.6	0.3	0.1								0.29	0.41	0.18	0.22	0.28	0.09	0.27	0.38	0.11	0.10	0.37			
	CORN, YELLOW																								
22	Cobs	1-28-234	Conc	3.0	1.7	0.8	45.0	49.4	5.6	2.8	35.2	41.5	60	4.00	2.94	3.50	12.66	2.78	2.50	2.12	4.72	3.59	0.69	4.78	42.16	6.59	5.93
		N		7	1	1	2	2	2	2				1	1	1	1	1	1	1	1	1	1	1			
		SD		0.3			12.9	7.9	0.6	2.9																	
23	Distillers grains with solubles, dried	5-28-236	Conc	29.7	8.6	5.0	28.5	63.3	8.2	3.6	42.2	50.8	80	4.06	2.50	3.71	9.59	2.24	1.82	1.86	4.87	3.44	0.87	4.70	37.80	5.93	4.81
		N		879	37	392	3	3	3	3				12	12	12	12	12	12	12	12	12	12	12			
		SD		3.3	3.4	2.6	2.6	5.0	6.8	0.7				0.28	0.21	0.13	2.80	0.39	0.21	0.13	0.37	0.34	0.16	0.27			
24	Gluten feed, dried	5-28-243	Conc	23.8	3.6	1.4	48.0	43.2	8.8	7.7	24.0	30.0	85	3.85	2.93	3.10	8.98	2.74	1.61	2.13	3.68	3.48	0.56	4.46	35.39	7.74	4.55
		N		186	9	22	7	7	7	7				11	11	11	11	11	11	11	11	11	11	11			
		SD		5.7	1.5	2.0	8.5	9.8	3.5	2.9				0.7	0.23	0.17	0.57	0.27	0.1	0.21	0.26	0.15	0.07	0.13			

(continues)

TABLE 15-2a. *(continued)*

Entry No.	Feed Name/ Description	International Feed No.	Feed Type	CP %	NDICP %	ADICP %	N Fractions (% CP) A	B	C	Kd (%/h) of B	Example RUP (%CP) DMI = 2.0% BW Forage = 25% DMI	DMI = 4.0% BW Forage = 50% DMI	RUP Digest %	Arg %CP	His %CP	Ile %CP	Leu %CP	Lys %CP	Met %CP	Cys %CP	Phe %CP	Thr %CP	Trp %CP	Val %CP	TEAA %CP	Lys %EAA	Met %EAA
25	Gluten meal, dried	5-28-242	Conc	65.0	3.6	3.0	3.9	90.9	5.2	2.3	63.8	74.6	92	3.20	2.13	4.11	16.79	1.69	2.37	1.80	6.35	3.38	0.53	4.64	45.20	3.74	5.24
		N		57	11	13	3	3	3	3				118	118	118	118	118	118	118	118	118	118	118			
		SD		7.8	2.7	2.0	5.8	5.3	2.9	0.5				0.21	0.13	0.10	0.52	0.15	0.16	0.14	0.13	0.11	0.04	0.16			
26	Grain, cracked, dry (Amino acids from ground dry corn)	4-02-854	Conc	9.4	0.7	0.3	23.9	72.5	3.6	4.9	37.0	47.3	90	4.61	3.13	3.31	11.20	2.84	2.13	2.13	4.62	3.55	0.72	4.02	40.13	7.08	5.31
		N		1388	66	50																					
		SD		1.3	0.3	0.2																					
27	Grain, ground, dry (CP, NDICP, and ADICP from cracked corn)	4-02-854	Conc	9.4	0.7	0.3	23.9	72.5	3.6	4.9	37.0	47.3	90	4.61	3.13	3.31	11.20	2.84	2.13	2.13	4.62	3.55	0.72	4.02	40.13	7.08	5.31
		N					27	27	27	27				599	599	599	599	599	599	599	599	599	599	599			
		SD					12.5	14.7	8.3	2.0				0.05	0.05	0.04	0.14	0.03	0.02	0.02	0.05	0.03	0.04	0.04			
28	Grain, steam-flaked	4-02-854	Conc	9.4	0.7	0.3	1.7	82.8	15.5	3.0	63.7	74.5	90	4.73	3.13	3.34	10.87	3.05	2.04	2.22	4.62	3.66	0.72	4.75	40.19	7.45	4.99
		N					1	1	1	1				6		6	6	6	6	6		6		6			
		SD												0.51		0.26	1.60	0.47	0.20	0.08		0.10		0.27			
29	Grain, rolled, high moisture (N fractions, Kd, and amino acids from ground grain, high moisture)	4-28-265	Conc	9.2	0.6	0.3	27.9	71.4	0.7	5.1	32.9	43.0	90	3.85	2.54	3.38	11.60	2.64	2.11	2.08	4.56	3.68	0.98	4.90	40.24	6.56	5.24
		N		4761	61	38																					
		SD		0.9	0.3	0.3																					
30	Grain, ground, high moisture	4-28-265	Conc	9.2	0.6	0.3	27.9	71.4	0.7	5.1	32.9	43.0	90	3.85	2.54	3.38	11.60	2.64	2.11	2.08	4.56	3.68	0.98	4.90	40.24	6.56	5.24
		N					3	3	3	3				37	37	37	37	37	37	37	37	37	37	37			
		SD					2.9	2.0	0.9	2.5				0.74	0.22	0.25	0.93	0.41	0.28	0.21	0.33	0.30	0.10	0.38			
31	Grain and cob, dry, ground	4-02-849	Conc	8.6	0.9	0.4	30.0	68.3	1.7	5.0	32.8	42.5	90	3.30	2.79	3.54	12.97	2.60	2.00	1.96	4.50	3.56	0.68	4.74	40.68	6.39	4.92
		N		190	4	6	1	1	1	1				56	56	56	56	56	56	56	56	56	56	56			
		SD		1.6	0.1	0.3								0.61	0.32	0.15	0.66	0.17	0.15	0.11	0.30	0.09	0.07	0.16			
32	Grain and cob, high moisture, ground (N fractions and Kd calculated from dry and high moisture grains)	4-26-240	Conc	8.4	0.7	0.3	34.0	65.7	0.3	5.2	29.6	38.9	90	3.30	2.79	3.56	14.56	2.28	1.70	1.96	4.50	3.32	0.66	4.51	41.17	5..54	4.13
		N		2684	49	33								12	12	12	12	12	12	12	12	12	12	12			
		SD		1.0	0.29	0.1								0.34	0.28	0.21	0.83	0.31	0.14	0.23	0.34	0.18	0.07	0.28			
33	Hominy	4-02-887	Conc	11.9	1.5	0.5	45.0	49.0	6.0	7.0	24.3	31.2	90	5.44	2.72	3.50	9.51	3.69	1.75	1.75	4.17	3.88	0.97	5.05	40.68	9.07	4.30
		N		358	15	20	1	1	1	1																	
		SD		2.4	0.49	0.2																					
34	Silage, immature <25% DM (Amino acids from normal corn silage)	3-28-247	Wet	9.7	1.4	0.9	57.8	23.7	18.5	4.0	30.8	32.2	70	1.97	1.79	3.34	8.59	2.51	1.53	1.34	3.83	3.19	0.44	4.47	31.64	7.93	4.84
		N		70		9	7	7	7	7																	
		SD		2.2		0.1	8	5.7	4.6	1.3																	
35	Silage, normal 32-38% DM	3-28-248	Wet	8.8	1.3	0.8	51.3	30.2	18.5	4.4	33.3	35.3	70	1.97	1.79	3.34	8.59	2.51	1.53	1.34	3.83	3.19	0.44	4.47	31.64	7.93	4.84
		N		1033	667	77	11	11	11	11				122	122	122	122	122	122	122	122	122	122	122			
		SD		1.2	0.5	0.2	16.9	14.8	5.3	1.5				0.41	0.30	0.23	0.91	0.35	0.12	0.23		0.30	0.08	0.28			

36	Silage, mature >40% DM (Amino acids from normal corn silage)	3-28-249	Wet	8.5	1.3	0.9	48.8	27.6	23.6	3.2	39.3	41.1	70	1.97	1.79	3.34	8.59	2.51	1.53	1.34	3.83	3.19	0.44	4.47	31.64	7.93	4.84
		N		705		41	5	5	5	5																	
		SD		3.9		0.2	11.5	6.2	5.9	1.2																	
	COTTON SEED																									
37	Whole seeds with lint	5-01-614	Conc	23.5	2.4	1.9	45.4	46.7	7.9	15.7	17.7	22.9	80	11.52	3.11	3.20	5.88	4.35	1.71	1.76	5.30	3.46	1.27	4.70	44.51	9.77	3.84
		N		1124	71	4	4	4	4	4				79	79	79	79	79	79	79	79	79	79	79			
		SD		2.6	1.2	0.1	5	7.9	4.0	6.9				2.21	0.70	0.34	0.90	0.48	0.26	0.23	0.63	0.91	0.53	0.52			
38	Hulls (N fractions and Kd from canola hulls)	1-01-599	Conc	6.2	3.0	1.1	29.6	35.4	35.0	5.3	50.6	55.7	50	11.42	3.32	3.39	7.22	4.66	1.83	1.62	5.63	3.81	1.42	5.00	47.68	9.77	3.84
		N		134	10	1								3	3	3	3	3	3	3	3	3	3	3			
		SD		3.6	0.3									1.57	0.21	0.14	0.56	0.61	0.10	0.17	0.29	0.20	0.15	0.21			
39	Meal, solvent, 41% CP	5-01-630	Conc	44.9	3.3	1.8	25.6	55.5	18.9	6.8	40.0	47.9	92	11.05	2.82	3.09	5.89	4.13	1.59	1.68	5.31	3.23	1.21	4.24	42.55	9.71	3.74
		N		158	7	8	14	14	14	14				50	50	50	50	50	50	50	50	50	50	50			
		SD		4.1	0.9	0.5	6.1	16.5	15.9	2.8				0.73	0.20	0.20	0.25	0.29	0.10	0.23	0.14	0.15	0.06	0.31			
	FATS AND OILS																									
40	Calcium soaps	IFN	Conc	0	0	0	0	0	0	0			0														
		N																								
		SD																								
41	Hydrolyzed Tallow	IFN	Conc	0	0	0	0	0	0	0			0														
		N																								
		SD																								
42	Partially hydrogenated tallow	IFN	Conc	0	0	0	0	0	0	0			0														
		N																								
		SD																								
43	Tallow	IFN	Conc	0	0	0	0	0	0	0			0														
		N																								
		SD																								
44	Vegetable oil	4-05-077	Conc	0	0	0	0	0	0	0			0														
		N																								
		SD																								
	FEATHERS																									
45	Hydrolyzed meal		Conc	92.0	NA	NA	23.4	23.7	52.9	6.6	62.1	65.4	65	6.93	1.15	4.85	8.51	2.57	0.75	5.09	4.93	4.73	0.73	7.52	42.68	6.02	1.76
		N					3	3	3	3				156	156	156	156	156	156	156	156	156	156	156			
		SD					2.4	17.6	19.9	10.0				0.62	0.02	0.27	0.39	0.35	0.07	0.71	0.19	0.25	0.14	0.40			
46	Hydrolyzed meal with some viscera (N fractions and Kd from feather meal)	5-13-540	Conc	85.0	NA	NA	23.4	23.7	52.9	6.6	62.1	65.4	70	6.27	1.33	4.34	8.44	2.90	0.84	4.34	4.83	4.70	0.73	6.76	41.14	7.05	2.04
		N		39																							
		SD		9.8																							
	FISH BYPRODUCTS																									
47	Anchovy, meal, mech.	5-01-985	Conc	71.2	NA	NA	32.4	37.9	29.7	3.2	51.2	56.2	90	5.70	2.41	4.74	7.74	7.91	3.02	0.94	4.12	4.37	1.18	5.43	46.62	16.97	6.48
		N		58			7	7	7	7																	
		SD		2.2			11.3	19.8	17.5	2.0																	
48	Menhaden, meal, mech.	5-02-009	Conc	68.5	NA	NA	22.8	72.0	5.2	1.4	59.1	65.8	90	5.82	2.83	4.09	7.22	7.65	2.81	0.91	3.99	4.20	1.05	4.82	44.48	17.20	6.32
		N		147			10	10	10	10																	
		SD		4.4			8.0	19.1	11.8	0.4																	
	GRASSES, COOL SEASON																									
49	Pasture, intensively managed	2-02-260	Wet	26.5	3.9	1.1	30.7	63.5	5.8	12.3	22.2	25.5	75	4.28	1.88	3.38	6.22	3.46	1.37	0.93	4.60	3.56	1.33	4.41	34.49	10.03	3.97
		N		13		11	14	14	14	14																	
		SD		5.6		0.4	18.3	17.8	3.4	4.5																	
50	Hay, all samples	1-02-250	Dry	10.6	3.8	1.1	36.7	50.4	12.9	8.5	28.4	30.5	65	3.83	1.63	3.32	6.22	3.48	1.30	1.17	3.92	3.60	1.24	4.51	33.05	10.53	3.93
		N		4702	53	182																					
		SD		3.1	1.3	0.5																					

(continues)

TABLE 15-2a. *(continued)*

Entry No.	Feed Name/ Description	International Feed No.	Feed Type	CP %	NDICP %	ADICP %	N Fractions (% CP) A	B	C	Kd (%/h) of B	Example RUP (%CP) DMI = 2.0% BW Forage = 25% DMI	DMI = 4.0% BW Forage = 50% DMI	RUP Digest %	Arg %CP	His %CP	Ile %CP	Leu %CP	Lys %CP	Met %CP	Cys %CP	Phe %CP	Thr %CP	Trp %CP	Val %CP	TEAA %CP	Lys %EAA	Met %EAA
51	Hay, immature <55% NDF	1-02-212	Dry	18.0	3.4	1.3	45.0	46.7	8.3	12.4	19.7	21.3	70	3.83	1.63	3.32	6.22	3.48	1.30	1.17	3.92	3.60	1.24	4.51	33.05	10.53	3.93
		N		44	1	38	18	18	18	18																	
		SD		3.3		0.3	13.4	11.8	4.6	5.9																	
52	Hay, mid maturity 55-60% NDF	1-02-243	Dry	13.3	3.9	1.2	36.7	51.7	11.6	8.1	28.4	30.5	65	3.88	1.63	3.32	6.22	3.49	1.30	1.16	3.92	3.60	1.24	4.51	33.05	10.53	3.93
		N		55	2	35	27	27	27	27																	
		SD		3.4	0.2	0.3	8.7	10.7	5.4	3.9																	
53	Hay, mature >60% NDF	1-02-244	Dry	10.8	7.4	1.1	28.4	52.9	18.7	5.0	41.2	43.7	60	3.83	1.63	3.32	6.22	3.48	1.30	1.17	3.92	3.60	1.24	4.51	33.05	10.53	3.93
		N		413	1	61	68	68	68	68																	
		SD		2.8		0.3	13.9	18.8	12.0	3.3																	
54	Silage, all samples	3-02-222	Wet	12.8	3.3	1.5	56.1	33.2	10.7	5.8	24.8	26.9	60	3.06	1.66	3.58	6.16	3.30	1.22	0.78	4.37	3.37	1.07	4.89	32.68	10.10	3.73
		N		4401	68	4388																					
		SD		3.7	1.3	0.8																					
55	Silage, immature <55% NDF	3-02-217	Wet	16.8	4.3	1.1	60.1	31.8	8.1	8.1	19.1	21.0	65	3.06	1.66	3.57	6.12	3.28	1.21	0.78	4.37	3.34	1.07	4.89	32.57	10.07	3.72
		N		35		5	57	57	57	57																	
		SD		3.0		0.4	9.9	8.8	3.6	4.6																	
56	Silage, mid-maturity 55-60% NDF	3-02-218	Wet	16.8	4.3	1.1	60.4	31.0	8.6	4.8	23.2	25.2	60	3.06	1.66	3.57	6.12	3.28	1.21	0.78	4.37	3.34	1.07	4.89	32.57	10.07	3.72
		N		41		26	16	16	16	16																	
		SD		3.8		0.4	11.4	8.0	7.3	1.8																	
57	Silage, mature >60% NDF	3-02-219	Wet	12.7	3.2	1.4	47.9	37.1	15.0	4.6	32.9	35.2	55	3.06	1.66	3.60	6.23	3.35	1.23	0.77	4.37	3.42	1.07	4.91	32.90	10.18	3.74
		N		135		110	15	15	15	15																	
		SD		2.9		0.5	13.9	12.0	10.3	1.9																	
	GRASS-LEGUME MIXTURES Predominantly grass (17-22% Hemicellulose)																										
58	Hay, immature <51% NDF	1-02-275	Dry	18.4	4.2	1.3	44.4	47.7	7.9	13.8	18.7	20.3	70	4.16	1.71	3.56	6.51	3.89	1.37	1.23	4.13	3.80	1.31	4.70	35.14	11.07	3.90
		N		21		7																					
		SD		3.1		0.3																					
59	Hay, mid-maturity 51-57% NDF	1-02-277	Dry	17.4	4.2	1.4	38.6	50.5	10.9	10.6	24.6	26.5	65	4.20	1.71	3.55	6.51	3.89	1.37	1.23	4.13	3.80	1.31	4.69	35.16	11.06	3.90
		N		155	52	81																					
		SD		2.9	0.7	0.3																					
60	Hay, mature >57% NDF	1-02-280	Dry	13.3	4.4	1.3	31.0	52.1	16.9	7.25	34.8	37.1	60	4.15	1.71	3.54	6.49	3.86	1.36	1.24	4.13	3.79	1.30	4.68	35.01	11.03	3.88
		N		149	3	68																					
		SD		3.3	0.1	0.8																					
61	Silage, immature <51% NDF	3-02-302	Wet	18.0	3.1	1.2	60.5	31.1	8.4	9.4	18.2	20.0	65	3.26	1.67	3.61	6.09	3.58	1.25	0.78	4.32	3.46	1.04	4.92	33.20	10.78	3.77
		N		18		16																					
		SD		2.5		0.4																					
62	Silage, mid-maturity 51-57% NDF	3-02-265	Wet	17.6	3.1	1.4	59.6	32.1	8.3	6.7	20.9	22.8	60	3.26	1.67	3.67	6.18	3.56	1.25	0.78	4.32	3.46	1.04	4.92	33.33	10.68	3.75
		N		95		88																					
		SD		3.0		0.5																					

63	Silage, mature >57% NDF	3-02-266	Wet	15.4	3.1	1.8	49.2	36.4	14.4	5.5	30.5	32.7	55	3.26	1.67	3.68	6.27	3.59	1.27	0.77	4.32	3.52	1.04	4.94	33.56	10.70	3.78
		N		166		159																					
		SD		2.4		0.7																					
	Mixed grass and legume (12-15% Hemicellulose)																										
64	Hay, immature <47% NDF	1-02-275	Dry	19.7	3.9	1.3	43.8	48.8	7.4	15.1	17.9	19.4	75	4.50	1.79	3.79	6.81	4.31	1.43	1.30	4.34	4.00	1.38	4.89	37.24	11.57	3.84
		N		42		19																					
		SD		1.9		0.3																					
65	Hay, mid-maturity 47-53% NDF	1-02-277	Dry	18.4	4.6	1.5	40.5	49.3	10.2	13.0	21.8	23.5	70	4.51	1.79	3.78	6.79	4.29	1.43	1.29	4.34	3.99	1.37	4.88	37.17	11.54	3.85
		N		184	5	90																					
		SD		2.2	0.5	0.3																					
66	Hay, mature >53% NDF	1-02-280	Dry	18.2	4.4	1.7	33.6	51.3	15.1	9.5	30.1	32.0	65	4.47	1.79	3.75	6.76	4.25	1.43	1.30	4.34	3.98	1.36	4.86	36.99	11.49	3.87
		N		233	121	179																					
		SD		2.2	0.7	0.6																					
67	Silage, immature <47% NDF	3-02-302	Wet	20.3	3.1	1.4	60.9	30.4	8.7	10.6	17.5	19.2	70	3.47	1.68	3.76	6.24	3.85	1.29	0.79	4.28	3.59	1.01	4.95	34.12	11.28	3.78
		N		45		41																					
		SD		3.7		0.4																					
68	Silage, mid-maturity 47-53% NDF	3-02-265	Wet	19.1	3.5	1.6	58.9	33.2	8.0	8.5	19.1	21.0	65	3.47	1.68	3.76	6.24	3.85	1.29	0.79	4.28	3.59	1.01	4.95	34.12	11.28	3.78
		N		171	1	164																					
		SD		2.3		0.5																					
69	Silage, mature >53% NDF	3-02-266	Wet	17.4	3.5	2.0	50.4	35.7	13.9	6.3	28.3	30.6	60	3.47	1.68	3.76	6.30	3.83	1.30	0.78	4.28	3.62	1.02	4.97	34.23	11.19	3.80
		N		255		255																					
		SD		2.3		0.8																					
	Predominantly Legume (10-13.5% Hemicellulose)																										
70	Hay, immature <44% NDF	1-02-275	Dry	20.5	2.9	1.5	43.1	49.9	7.0	16.5	17.0	18.5	75	4.83	1.87	4.03	7.10	4.72	1.50	1.36	4.55	4.19	1.45	5.07	39.31	12.01	3.82
		N		157		120																					
		SD		2.4		1.2																					
71	Hay, mid-maturity 44-50% NDF	1-02-277	Dry	19.1	3.1	1.6	42.4	48.1	9.5	15.5	19.5	21.0	70	4.83	1.87	4.00	7.08	4.69	1.50	1.36	4.55	4.19	1.44	5.06	39.21	11.96	3.83
		N		296		210																					
		SD		2.0		0.3																					
72	Hay, mature >50% NDF	1-02-280	Dry	17.2	3.6	1.7	36.3	50.4	13.3	11.8	26.0	27.8	65	4.79	1.87	3.97	7.03	4.63	1.49	1.37	4.55	4.16	1.41	5.03	38.93	11.89	3.83
		N		134	1	85																					
		SD		2.4		0.5																					
73	Silage, immature <44% NDF	3-02-302	Wet	20.0	2.8	1.7	61.2	29.8	9.0	11.9	16.9	18.4	70	3.67	1.68	3.69	6.03	4.18	1.33	0.78	4.23	3.71	0.97	4.97	34.46	12.13	3.86
		N		193		191																					
		SD		2.2		0.4																					
74	Silage, mid-maturity 44-50% NDF	3-02-265	Wet	19.0	2.7	1.7	58.1	34.2	7.7	10.4	17.7	19.6	65	3.67	1.68	3.86	6.30	4.13	1.33	0.79	4.23	3.71	0.97	4.97	34.85	11.85	3.82
		N		505		496																					
		SD		2.3		0.5																					
75	Silage, mature >50% NDF	3-02-266	Wet	18.3	2.7	2.0	51.6	35.1	13.3	7.2	26.4	28.6	60	3.67	1.68	3.84	6.34	4.06	1.34	0.78	4.23	3.72	0.99	4.99	34.86	11.65	3.84
		N		339	2	337																					
		SD		2.4	0.5	0.8																					
	LEGUMES, FORAGE																										
76	Pasture, intensively managed	2-29-431	Wet	26.5	3.8	1.1	31.1	61.6	7.3	12.3	23.2	26.4	75	5.21	1.97	4.30	7.46	5.18	1.58	1.44	4.81	4.44	1.54	5.31	41.80	12.39	3.78
		N		24	2	2	8	8	8	8																	
		SD		5.6			16.5	15.5	2.1	4.9																	
77	Hay, all samples	1-20-648	Dry	20.2	2.4	1.6	41.9	49.2	8.9	16.6	18.8	20.2	70	5.14	1.95	4.22	7.35	5.08	1.56	1.42	4.78	4.37	1.50	5.23	41.18	12.34	3.79
		N		12218	237	825																					
		SD		2.6	0.9	0.4																					

(continues)

TABLE 15-2a. *(continued)*

Entry No.	Feed Name/ Description	International Feed No.	Feed Type	CP %	NDICP %	ADICP %	N Fractions (% CP) A	B	C	Kd (%/h) of B	Example RUP (%CP) DMI = 2.0% BW Forage = 25% DMI	DMI = 4.0% BW Forage = 50% DMI	RUP Digest %	Arg %CP	His %CP	Ile %CP	Leu %CP	Lys %CP	Met %CP	Cys %CP	Phe %CP	Thr %CP	Trp %CP	Val %CP	TEAA %CP	Lys %EAA	Met %EAA
78	Hay, immature <40% NDF	1-07-792	Dry	22.8	2.7	1.6	42.5	51.0	6.5	17.8	16.3	17.7	75	5.16	1.95	4.26	7.39	5.13	1.56	1.42	4.76	4.39	1.52	5.26	41.38	12.40	3.77
		N		210		210	27	27	27	27																	
		SD		2.1		0.3	10.4	10.6	3.6	7.8																	
79	Hay, mid-maturity 40- 46% NDF	1-07-788	Dry	20.8	2.5	1.6	44.3	46.9	8.8	17.9	17.6	18.9	70	5.14	1.95	4.23	7.36	5.09	1.56	1.42	4.76	4.38	1.50	5.24	41.21	12.35	3.79
		N		296		296	25	25	25	25																	
		SD		2.3		0.3	10.3	9.6	3.7	5.4																	
80	Hay, mature >46% NDF	1-07-789	Dry	17.8	2.1	1.7	38.9	49.6	11.5	14.0	22.5	24.1	65	5.11	1.95	4.18	7.30	5.01	1.55	1.43	4.76	4.35	1.47	5.20	40.88	12.26	3.79
		N		237		237	31	31	31	31																	
		SD		2.6		0.4	12.4	14.1	6.9	7.0																	
81	Silage, all samples	3-07-796	Wet	20.0	2.9	1.6	57.3	33.0	9.9	11.1	18.9	20.6	65	3.87	1.69	3.87	6.24	4.40	1.37	0.78	4.18	3.83	0.94	5.00	35.39	12.43	3.87
		N		8576	255	8567																					
		SD		3.0	1.1	0.6																					
82	Silage, immature <40% NDF	3-07-795	Wet	23.2	3.4	1.6	61.6	29.1	9.3	13.1	16.5	17.9	70	3.87	1.69	3.73	6.00	4.48	1.37	0.78	4.18	3.83	0.93	5.00	35.08	12.77	3.91
		N		322		189	21	21	21	21																	
		SD		2.1		0.3	16.8	13.8	6.5	7.6																	
83	Silage, mid-maturity 40-46% NDF	3-07-797	Wet	21.9	3.1	1.8	57.3	35.3	7.4	12.2	16.6	18.4	65	3.87	1.69	3.95	6.36	4.41	1.37	0.79	4.18	3.83	0.94	5.00	35.60	12.39	3.85
		N		750	2	250	10	10	10	10																	
		SD		1.8		0.5	10.2	9.2	2.3	7.1																	
84	Silage, mature >47% NDF	3-07-798	Wet	20.3	2.9	2.1	52.9	34.4	12.7	8.0	24.7	26.7	60	3.87	1.69	3.92	6.37	4.30	1.37	0.78	4.18	3.82	0.96	5.02	35.50	12.11	3.86
		N		731		121	18	18	18	18																	
		SD		1.8		0.6	14.1	12.7	6.3	3.6																	
85	LINSEED (Flax) meal, solvent	5-30-288	Conc	32.6	7.9	1.1	17.6	69.9	12.5	5.4	43.0	53.0	85	8.84	2.02	4.64	6.13	3.69	1.76	1.76	4.67	3.75	1.55	5.18	42.23	8.74	4.17
		N		6	1	2	2	2	2	2																	
		SD					17.5	35.1	17.6	2.3																	
	MEAT																										
86	Meal, rendered	5-09-323	Conc	57.6	NA	NA	34.9	40.1	25.0	6.0	41.5	47.2	80	7.06	2.06	2.96	6.31	5.38	1.43	1.12	3.57	3.38	0.67	4.44	37.26	14.44	3.84
		N		66			1	1	1	1				435	435	435	435	435	435	435	435	435	435	435			
		SD		7.6										0.75	0.26	0.40	0.54	0.57	0.21	0.42	0.29	0.29	0.07	0.49			
87	Meat and bone, rendered	5-00-388	Conc	54.2	NA	NA	18.1	48.2	33.7	7.2	51.4	58.2	60	6.98	1.89	2.76	6.13	5.18	1.40	1.01	3.36	3.27	0.58	4.20	35.74	14.49	3.92
		N		62			8	8	4	8				227	227	227	227	227	227	227	227	227	227	227			
		SD		5.6			8.2	19.1	11.7	6.5				0.53	0.33	0.32	0.59	0.42	0.18	0.27	0.29	0.26	0.14	0.45			
	MOLASSES																										
88	Beet sugar (Amino acids from molasses, sugarcane)	4-00-668	Conc	8.5	0	0	74.1	25.9	0.0	3.2	14.7	18.1	100	4.91	1.59	4.44	3.59	1.00	0.22	0.83	2.71	1.57	0.45	3.36	23.84	4.19	0.92
		N		12			2	2	2	2																	
		SD		1.1			20.4	20.3		3.2																	
89	Sugarcane (N fractions and Kd from molasses, beet sugar)	4-04-696	Conc	5.8	0	0	74.1	25.9	0.0	3.2	14.7	18.1	100	4.91	1.59	4.44	3.59	1.00	0.22	0.83	2.71	1.57	0.45	3.36	23.84	4.19	0.92
		N		64										10	10	10	10	10	10	10	10	10	10	10			
		SD		2.0										2.91	0.51	0.08	1.21	0.40	0.05	0.18	1.25	0.33	0.07	0.83			

	OATS																								
90	Grain, rolled	4-03-309	Conc	13.2	1.8	0.3	65.2	28.8	6.0	17.4	11.6	14.6	75	6.82	2.44	3.75	7.30	4.18	1.71	2.85	5.16	3.46	1.19	5.19	41.20	10.15	4.15
		N		308		2	4	4	2	4				18	18	18	18	18	18	18	18	18	18	18			
		SD		1.8			27.3	28.3	2.4	14.8				0.44	0.25	0.22	0.34	0.25	0.09	0.18	0.22	0.13	0.09	0.41			
91	Hay, headed (Amino acids from oat silage, headed)	1-09-099	Dry	9.1	1.3	0.6	35.0	53.1	11.9	4.3	37.1	39.5	70	2.18	1.94	5.50	6.65	3.56	1.87	0.74	4.70	4.13	1.42	4.13	36.09	9.86	5.18
		N		422	7	8																					
		SD		2.9	0.3	0.4																					
92	Silage, headed	3-21-843	Wet	12.9	2.1	1.0	45.6	30.9	23.5	5.4	37.2	39.1	65	2.18	1.94	5.50	6.65	3.56	1.87	0.74	4.70	4.13	1.42	4.13	36.09	9.86	5.18
		N		634	5	630	2	2	2	2				3	3	3	3	3	3	3	3	3	3	3			
		SD		1.6	0.4	0.5	0.8	11.6	12.2	3.4				0.28	0.21	0.30	0.43	0.34	0.25	0.06	0.46	0.24	0.15	0.26			
	PEANUT																										
93	Meal, solvent	5-08-605	Conc	51.8	5.8	1.1	61.7	36.6	1.7	16.1	9.2	13.2	90	11.07	2.42	3.27	6.40	3.34	1.17	1.38	4.85	2.69	0.98	3.94	40.13	8.32	2.92
		N		51	2	2	2	2	2	2				22	22	22	22	22	22	22	22	22	22	22			
		SD		4.4			26.4	29.2	2.4	4.4				0.44	0.15	0.11	0.14	0.25	0.10	0.10	0.22	0.10	0.08	0.18			
	POTATO																										
94	Byproduct meal (N fractions and Kd from beet pulp)	4-03-775	Conc	10.5	5.2	2.3	4.5	90.5	5.0	2.0	66.2	76.3	90	2.47	1.84	3.14	5.34	4.21	0.95	1.34	3.62	3.11	0.67	4.40	29.75	14.15	3.19
		N		79	2	2								3	3	3	3	3	3	3	3	3	3	3			
		SD		8.4										0.30	0.20	0.13	0.25	0.73	0.08	0.19	0.14	0.26	0.04	0.19			
	RICE																										
95	Bran	4-03-928	Conc	15.5	3.7	0.4	32.6	49.0	18.4	5.0	40.7	47.7	65	7.80	2.78	3.42	7.10	4.65	2.05	2.23	4.76	3.87	1.17	5.24	42.84	10.85	4.79
		N		86	11	3	1	1	1	1				14	14	14	14	14	14	14	14	14	14	14			
		SD		2.2	1.7	0.1								0.33	0.07	0.19	0.32	0.18	0.12	0.11	0.39	0.15	0.03	0.24			
	RYE, ANNUAL																										
96	Silage, vegetative (N fractions and Kd from barley silage)	3-21-853	Wet	16.1	1.9	0.9	56.6	33.0	10.4	5.9	24.3	26.3	65	1.04	1.21	3.45	4.88	2.35	1.16	0.66	3.42	2.51	0.60	4.80	25.42	9.24	4.56
		N		1175	31	504								10	10	10	10	10	10	10	10	10		10			
		SD		3.1	1.4	0.4								0.13	0.23	0.78	2.53	1.23	0.15	0.01	0.80	0.37		1.21			
	SAFFLOWER																										
97	Meal, solvent (N fractions and Kd from canola meal)	5-04-110	Conc	29.0	2.0	1.2	23.2	70.4	6.4	10.4	26.6	35.7	75	8.72	2.52	2.86	6.50	3.16	1.45	1.62	4.57	2.78	1.41	5.04	39.01	8.10	3.72
		N		5	1	1																					
		SD		0.2																							
	SORGHUM, GRAIN TYPE																										
98	Grain, dry rolled	4-04-380	Conc	11.6	2.8	1.0	18.9	79.4	1.7	5.5	36.0	47.3	85	4.09	2.44	3.94	13.06	2.38	1.81	1.88	5.25	3.37	1.09	4.95	42.38	5.62	4.27
		N		437	2	2	2	2	1	2				115	115	115	115	115	115	115	115	115	115	115			
		SD		1.8			6.4	7.6		0.7				0.32	0.17	0.19	0.69	0.24	0.15	0.18	0.32	0.12	0.06	0.27			
99	Grain, steam-flaked (Amino acid data from sorghum grain)	4-04-380	Conc	11.6	2.8	1.0	33.2	21.9	44.9	2.5	58.6	61.3	85	4.09	2.44	3.94	13.06	2.38	1.81	1.88	5.25	3.37	1.09	4.95	42.38	5.62	4.27
100	Silage (N fractions and Kd from corn silage, normal)	3-22-371	Wet	9.1	2.4	1.2	42.4	37.3	20.3	4.1	39.4	41.7	70	4.07	2.47	3.91	13.04	2.64	1.93	0.64	5.24	3.59	1.16	5.00	43.04	6.13	4.48
		N		1168	18	581								4	4	4	4	4	4	4	4	4	4	4			
		SD		2.6	1.0	0.6								0.80	0.43	0.25	0.94	0.36	0.01	0.09	0.49	0.30	0.11	0.38			
	SORGHUM, SUDAN TYPE																										
101	Hay (Data from grass hay, mature)	1-04-480	Dry	9.4	2.8	1.2	28.4	52.9	18.7	5.0	41.4	43.9	60	3.83	1.63	3.32	6.22	3.48	1.30	1.17	3.92	3.60	1.24	4.51	33.05	10.53	3.93
		N		726	7																						
		SD		2.2	0.5																						
102	Silage (Amino acids from grass silage, mature)	3-04-499	Wet	10.8	2.4	1.2	37.6	29.7	32.7	3.7	48.6	50.5	55	3.06	1.66	3.60	6.23	3.35	1.23	0.77	4.37	3.42	1.07	4.91	32.90	10.18	3.74
		N		140	1	138	1	1	1	1																	
		SD		3.2		0.4																					

(continues)

TABLE 15-2a. *(continued)*

Entry No.	Feed Name/ Description	International Feed No.	Feed Type	CP %	NDICP %	ADICP %	N Fractions (% CP) A	B	C	Kd (%/h) of B	Example RUP (%CP) DMI = 2.0% BW Forage = 25% DMI	DMI = 4.0% BW Forage = 50% DMI	RUP Digest %	Arg %CP	His %CP	Ile %CP	Leu %CP	Lys %CP	Met %CP	Cys %CP	Phe %CP	Thr %CP	Trp %CP	Val %CP	TEAA %CP	Lys %EAA	Met %EAA
	SOYBEAN																										
103	Hulls	1-04-560	Conc	13.9	3.5	1.0	22.5	72.2	5.3	6.2	34.4	44.6	70	5.18	2.88	3.86	6.50	6.27	1.16	1.76	4.33	3.60	1.08	4.56	39.43	15.90	2.94
		N		138	18	16	2	2	2	2				8	8	8	8	8	8	8	8	8	8	8			
		SD		4.6	0.5	0.3	5.5	6.9	1.4	0.1				0.33	0.12	0.01	0.22	0.36	0.07	0.13	0.20	0.12	0.10	0.16			
104	Meal, expellers, 45% CP	5-12-820	Conc	46.3	9.6	0.4	8.7	91.3	0.0	2.4	58.0	69.0	93	7.40	2.77	4.56	7.81	6.27	1.45	1.48	5.26	3.98	1.27	4.71	45.47	13.79	3.19
		N		546	16	3	3	3	1	3				9	9	9	9	9	9	9	9	9	9	9			
		SD		3.2	5.9	0.1	9.7	9.7		0.8				0.28	0.05	0.21	0.16	0.07	0.01	0.01	0.27	0.09	0.04	0.16			
105	Meal, nonenzymatically browned		Conc	50.0	27.0	1.6	2.4	97.6	0.0	1.7	69.4	79.4	93	6.78	2.40	4.56	8.92	5.78	1.32	1.46	5.60	4.31	1.27	5.46	46.40	12.46	2.84
		N		14	2	2	7	7	1	7				4	4		4	4	4	4	4	4		4			
		SD		1.6	4.9	0.8	1.8	1.8		0.2				0.17	0.06		0.18	0.25	0.09	0.04	0.09	0.08		0.11			
106	Meal, solvent, 44% CP	5-20-637	Conc	49.9	0.7	0.4	22.5	76.8	0.7	9.4	24.3	34.6	93	7.38	2.77	4.56	7.81	6.28	1.45	1.52	5.26	3.98	1.27	4.69	45.43	13.82	3.19
		N		111		44	14	14	10	14				345	345	345	345	345	345	345	345	345	345	345			
		SD		1.2		0.2	13.4	14.0	0.8	2.6				0.35	0.20	0.19	0.19	0.22	0.07	0.13	0.20	0.13	0.07	0.22			
107	Meal, solvent, 48% CP	5-20-638	Conc	53.8	0.7	0.4	15	84.4	0.6	7.5	30.8	42.6	93	7.32	2.77	4.56	7.81	6.29	1.44	1.50	5.26	3.96	1.26	4.64	45.30	13.89	3.18
		N		549	21		14	14	11	14				295	295	295	295	295	295	295	295	295	295	295			
		SD		2.1	0.2		6.2	5.6	1.9	2.4				0.36	0.17	0.22	0.24	0.27	0.09	0.15	0.21	0.14	0.07	0.26			
108	Seeds, whole	5-04-610	Conc	39.2	2.3	0.6	27.8	70.2	2.0	10.9	21.5	30.4	85	7.52	2.76	4.42	7.41	5.98	1.47	1.46	4.99	3.96	1.30	4.70	44.51	13.44	3.30
		N		48	2	3	5	5	1	5				17	17	17	17	17	17	17	17	17	17	17			
		SD		5.4		0.3	16.1	16.2		4.1				0.47	0.01	0.19	0.21	0.09	0.03	0.00	0.35	0.08	0.06	0.00			
109	Seeds, whole roasted	5-04-597	Conc	43.0	6.1	2.04	17.8	77.0	5.2	9.3	29.1	39.4	85	6.79	2.61	4.22	7.13	5.98	1.40	1.44	4.32	3.80	1.13	4.59	41.98	14.24	3.33
		N		410	18	4	11	11	1	11				13	13	13	13	13	13	13	13	13	13	13			
		SD		3.8	4.8	0.9	8.5	12.8		3.5				0.38	0.10	0.03	0.12	0.08	0.00	0.00	0.24	0.03	0.00	0.05			
110	Silage, early maturity (N fractions, Kd, and amino acids from legume silage, mid maturity)	3-04-579	Wet	17.4	2.5	1.4	57.3	35.3	7.4	12.2	16.6	18.4	65	3.87	1.69	3.73	6.00	4.48	1.37	0.78	4.18	3.83	0.93	5.00	35.08	12.77	3.91
		N		20		17																					
		SD		5.1		0.7																					
	SUNFLOWER																										
111	Meal, solvent	5-30-032	Conc	28.4	5.5	1.4	42.0	52.8	5.2	29.2	11.8	15.9	90	8.18	2.60	4.09	6.41	3.56	2.29	1.77	4.62	3.72	1.19	4.95	41.61	8.56	5.50
		N		48	3	3	5	5	5	5				109	109	109	109	109	109	109	109	109	109	109			
		SD		5.0		0.4	17.7	17.3	4.4	15.2				0.45	0.18	0.15	0.21	0.19	0.12	0.12	0.22	0.13	0.06	0.20			
112	Oil seeds, whole (Amino acids from sunflower meal, solvent)	5-08-530	Conc	19.2	2.9	1.9	66.7	31.7	1.6	17.0	7.9	11.2	80	8.18	2.60	4.09	6.41	3.56	2.29	1.77	4.62	3.72	1.19	4.95	41.61	8.56	5.50
		N		15	1	1	1	1	1	1																	
		SD		4.2																							
	TOMATO																										
113	Pomace (N fractions and Kd from citrus pulp, dried)	5-05-042	Conc	19.3	8.0	3.8	41.7	53.3	5.0	7.4	24.2	31.7	80	5.53	1.83	3.23	7.87	7.40	0.47	0.47	4.17	3.23	0.94	4.64	39.31	18.80	1.20
		N		22	1	2																					
		SD		4.8		0.1																					

	TRITICALE																								
114	Silage, headed (N fractions and Kd from barley silage)	3-26-208	Wet	13.8	2.2	1.0	56.6	32.9	10.5	5.9	24.3	26.4	65	3.84	2.53	3.04	5.86	1.83	1.31	1.43	4.78	2.14	1.03	3.68	31.47	5.82	4.16
		N		107	2	86								3	3	3	3	3	3	3	3	3		3			
		SD		4.0		0.8								0.45	0.33	0.22	0.08	0.19	0.11	0.11	0.47	0.16		0.36			
	WHEAT																								
115	Bran	4-05-190	Conc	17.3	2.8	1.4	33.7	62.5	3.8	20.0	14.6	20.7	75	6.84	2.82	3.15	6.16	4.05	1.57	2.10	3.97	3.26	1.37	4.50	37.68	10.75	4.17
		N		81		8	4	4	3	4				75	75	75	75	75	75	75	75	75	75	75			
		SD		1.1		0.3	13.1	15.3	2.3	8.1				0.34	0.19	0.13	0.19	0.24	0.09	0.15	0.21	0.13	0.15	0.24			
116	Grain, rolled	4-13-245	Conc	14.2	1.7	0.2	27.1	65.1	7.8	18.8	19.6	26.2	95	4.69	2.43	3.32	6.64	2.81	1.60	2.20	4.59	2.90	1.19	4.24	34.42	8.16	4.65
		N		165	5	5	6	6	6	6				278	278	278	278	278	278	278	278	278	278	278			
		SD		2.3	0.7	0.1	18.6	28.2	16.2	8.5				0.47	0.18	0.15	0.27	0.30	0.10	0.15	0.23	0.13	0.10	0.27			
117	Hay, headed (N fractions and Kd from oat hay; amino acids from wheat silage)	1-05-170	Dry	9.4	1.1	0.8	35	53.1	11.9	4.3	36.9	39.4	70	2.02	3.60	4.01	6.64	4.21	1.77	0.61	4.24	4.21	1.03	5.80	37.51	11.22	4.72
		N		120	7	17																					
		SD		3.8	0.2	0.1																					
118	Middlings	4-05-205	Conc	18.5	2.8	0.5	40.3	53.6	6.1	15.2	17.7	23.7	90	5.86	2.75	3.44	6.65	3.63	1.60	2.04	4.43	3.11	1.28	4.63	37.38	9.71	4.28
		N		245	26	30	4	4	3	4				120	120	120	120	120	120	120	120	120	120	120			
		SD		2.1	0.4	0.1	23	25.3	3.1	3.4				0.44	0.10	0.14	0.23	0.31	0.09	0.11	0.23	0.09	0.12	0.16			
119	Silage, early head	3-21-865	Wet	12.0	1.5	1.0	69.5	8.7	21.8	29.0	22.9	23.2	70	2.02	3.60	4.01	6.64	4.21	1.77	0.61	4.24	4.21	1.03	5.80	37.51	11.22	4.72
		N		471	30	397	2	2	2	2				5	5	5	5	5	5	5	5	5	5	5			
		SD		3.0	0.8	0.4	0.4	1.6	1.2	11.7				0.26	0.50	0.25	0.43	0.41	0.04	0.10	0.00	0.28	0.09	0.31			
120	Straw (Amino acids estimated)	1-05-175	Dry	4.8	2.1	1.4	9.3	51.4	39.3	1.4	76.4	78.3	65	1.08	1.64	1.78	3.25	3.25	1.19	1.07	2.08	3.25	1.42	2.67	21.61	15.04	5.51
		N		161	8	8	2	2	2	2																	
		SD		1.9	0.2	0.3	3.7	47.2	50.6	0.8																	
	WHEY																								
121	Wet, cattle (N fractions and Kd estimated)	4-08-134	Conc	14.6	NA	NA	90.0	10.0	0.0	5.0	4.6	6.0	95	2.09	1.89	5.12	8.95	7.42	1.41	2.04	2.94	5.94	1.48	4.92	42.16	17.60	3.34
		N		68										13	13	13	13	13	13	13	13	13	13	13			
		SD		14.1										0.12	0.17	0.24	0.39	0.45	0.10	0.21	0.47	0.28	0.13	0.30			

NOTE: Values for CP, NDICP, and ADICP are the same as those presented in Table 15-1. The N fraction and Kd data are a summary of published values. The example RUP values were calculated using the equations in the text and in the case of dry forages the N fractions (A,B, and C), the Kd of the B fraction, and the NDF values reported in the feed tables. Most of the amino acid values are courtesy of Degussa Corporation with a majority of the values obtained from the book, "The Amino Acid Composition of Feedstuffs" (Fickler et al., 1996). Exceptions are values for extruded soybean meal, whole sunflower seeds, safflower meal, and some of the data for nonenzymatically browned soybean meal (courtesy of Rhone-Poulenc Animal Nutrition), values for feather meal with some viscera (Cunningham et al, 1994), values for tomato pomace (US-Canadian Table of Feed Composition, 1982), and values for dried brewers grains, hominy, fish byproducts, linseed meal, and safflower meal (NRC, 1998). The amino acid values for the grass-legume mixtures of hays and silages were calculated from the values for all grass and all legume forages assuming 75% grass and 25% legume for predominantly grass, 50% grass and 50% legume for mixed grass and legume, and 25% grass and 75% legume for predominantly legume.

Table 15-2b. Nitrogen Fractions and Amino Acid Composition of Less Commonly Used Feedstuffs, Which Are Cited in the Literature, But Were Not Included as Commonly Used Feedstuffs in Table 15-2a

Entry No.	Feed Name/Description	N and SD	Feed Type	CP %	N Fractions (% CP) A	B	C	Kd (%/h) of B	RUP Digest %	Arg %CP	His %CP	Ile %CP	Leu %CP	Lys %CP	Met %CP	Cys %CP	Phe %CP	Thr %CP	Trp %CP	Val %CP	TEAA %CP	Lys %EAA	Met %EAA
	ALFALFA																						
1	Cubes, dry (Amino acids from mid-maturity legume hay)		Dry	19.5	37.9	52.7	9.4	10.8	75	5.14	1.95	4.23	7.36	5.09	1.56	1.42	4.76	4.38	1.50	5.24	41.21	12.35	3.79
		N		4	4	4	4	4															
		SD		0.3	4.8	7.3	2.5	3.6															
2	Cubes, ensiled (Amino acids from mid-maturity legume silage)		Wet	18.7	68.6	20.7	10.7	14.5	65	3.87	1.69	3.95	6.36	4.41	1.37	0.79	4.18	3.83	0.94	5.00	35.60	12.39	3.85
		N		1	1	1	1	1															
		SD																					
	BARLEY																						
3	Grain, dry, hulless (His and Phe from barley grain, rolled)		Conc	12.8	31.8	62.6	5.6	24.6	90	4.26	2.30	3.04	5.99	3.07	1.53	2.04	5.11	2.94	1.18	4.55	36.00	8.53	4.25
		N		2	8	8	8	8		42		42	42	42	42	42		42	14	42	42	42	42
		SD		0.4	7.6	8	0.9	5.8		0.21		0.12	0.70	0.26	0.12	0.20		0.16	0.10	0.49			
4	Grain, heat treated (Amino acids from barley grain, rolled)		Conc	12.1	27	60.7	12.3	7	85	4.82	2.30	3.44	6.96	3.33	1.66	2.28	5.11	3.32	1.12	4.73	36.80	9.05	4.51
		N		3	3	3	3	3															
		SD		1.3	15.5	31.3	15.8	3.4															
5	Grain, high moisture (Amino acids from barley grain, rolled)		Conc	13.1	25.6	65.6	8.8	15	85	4.82	2.30	3.44	6.96	3.33	1.66	2.28	5.11	3.32	1.12	4.73	36.80	9.05	4.51
		N		2	4	4	4	4															
		SD		0.6	21.9	22.6	9.1	10.2															
6	Grain, high moisture, ammoniated (Amino acids from barley grain, rolled)		Conc	15.4	33.8	52.4	13.8	20.7	85	4.82	2.30	3.44	6.96	3.33	1.66	2.28	5.11	3.32	1.12	4.73	36.80	9.05	4.51
		N		5	5	5	5	5															
		SD		1.6	18.2	13	5.3	11.9															
7	Mill run, 80% NDF		Conc	6.6	38.2	29.7	32.1	11.2	70														
		N		2	2	2	2	2															
		SD		0.4	2	0.8	2.8	2.2															
8	Mill run, 60% NDF		Conc	12.6	35.6	50.4	14	12.8	70														
		N		1	1	1	1	1															
9	Grain, temper-rolled, hulless (Amino acids from barley grain, hulless)		Conc	12.5	11.8	81.2	7	14.5	85	4.26	2.30	3.04	5.99	3.07	1.53	2.04	5.11	2.94	1.18	4.55	36.00	8.53	4.25
		N		5	5	5	5	5															
		SD		0.4	3.2	3.6	1.2	2.1															
10	Silage, vegetative (Amino acids from rye silage)		Wet	16.6	77.4	16.8	5.8	12.3	65	1.04	1.21	3.45	4.88	2.35	1.16	0.66	3.42	2.51	1.42	4.80	26.42	8.96	4.39
		N		1	1	1	1	1															
		SD																					

11	Straw (CP and amino acids estimated)		Dry	4.3	46.9	27.4	25.7	1.3	65	1.08	1.64	1.78	3.25	3.25	1.19		2.08	3.25	1.42	2.67	21.61	15.04	5.51
		N			1	1	1	1															
		SD																					
	BORAGE (*Borago officinalis*)																						
12	Meal, dry		Conc	32.5	31.8	48.6	19.6	7.9															
		N		2	2	2	2	2															
		SD		1.3	0.1	4.5	4.4	2.7															
	CANOLA																						
13	Hulls		Conc	16.1	29.5	35.5	35	5.3	70														
		N		2	2	2	2	2															
		SD		1	5.7	5.3	0.4	0.8															
14	Seeds, coarse grind (AA from canola meal, mech. extracted)		Conc	25	3.6	84.6	11.8	7.4	50	7.01	2.80	3.83	6.77	5.62	1.87	2.54	4.06	4.42	1.46	4.73	42.56	13.20	4.39
		N		1	1	1	1	1															
		SD																					
15	Meal, mech. extracted, heated (Amino acids from canola meal, mech. extracted)		Conc	39.3	18.3	80.7	1.0	4.4	70	7.01	2.8	3.83	6.77	5.62	1.87	2.54	4.06	4.42	1.46	4.73	42.56	13.2	4.39
		N																					
		SD																					
16	COCONUT Meal (Amino acids from NRC, 1998)	N	Conc	21.3 2	28.0 2	65.1 2	6.9 2	8.7 2	90	10.87	1.78	3.42	6.21	2.65	1.60	1.32	3.84	3.06	0.87	4.89	39.19	6.76	4.08
		SD		3.5	1.3	5.9	7.2	1.8															
	CORN, YELLOW																						
17	Distillers grains, dried (Amino acids from 1998 Swine NRC)		Conc	22.2	39.5	41.6	18.9	7.9	75	3.63	2.54	3.83	10.6	2.98	1.73	1.13	3.99	2.50	0.81	5.00	37.61	7.92	4.60
		N		4	5	5	5	5															
		SD		6.2	13.1	12.8	12.2	4.3															
18	Grain, dry, extruded (Amino acids from corn grain, dry)		Conc	8.1	42.3	23.0	34.7	3.9	90	4.47	3.07	3.51	12.80	2.65	2.03	1.93	4.92	3.56	0.68	4.77	42.46	6.24	4.78
		N		1	1	1	1	1															
		SD																					
19	Silage <45% NDF (Amino acids from corn silage, mature)		Wet	8.1	65.7	15.3	19.0	2.1	70	1.96	1.79	3.33	8.59	2.43	1.52	1.28	3.83	3.19	0.44	4.49	31.59	7.69	4.81
		N		3	4	4	4	4															
		SD		0.6	10.5	4.2	7.4	0.9															
20	Silage 45 to 50% NDF (Amino acids from corn silage, normal)		Wet	8.4	54.8	28.8	16.4	4.5	70	1.97	1.79	3.34	8.59	2.51	1.53	1.34	3.83	3.19	0.44	4.47	31.64	7.93	4.84
		N		7	7	7	7	7															
		SD		0.6	18.2	14	5.7	1.6															
21	Silage 45 to 50% NDF (Amino acids from corn silage, normal)		Wet	9.5	51.2	29.0	19.8	3.9	70	1.97	1.79	3.34	8.59	2.51	1.53	1.34	3.83	3.19	0.44	4.47	31.64	7.93	4.84
		N		8	8	8	8	8															
		SD		1.5	17.3	14.0	5.3	1.2															

(continues)

Table 15-2b. *(continued)*

Entry No.	Feed Name/Description	N and SD	Feed Type	CP %	N Fractions (% CP) A	B	C	Kd (%/h) of B	RUP Digest %	Arg %CP	His %CP	Ile %CP	Leu %CP	Lys %CP	Met %CP	Cys %CP	Phe %CP	Thr %CP	Trp %CP	Val %CP	TEAA %CP	Lys %EAA	Met %EAA
22	Silage >50% NDF (Amino acids from corn silage, immature)		Wet	9.5	50.9	26.4	22.7	4.6	70	1.96	1.79	3.36	8.58	2.58	1.54	1.42	3.83	3.19	0.44	4.46	31.72	8.13	4.85
		N		5	5	5	5	5															
		SD		1.3	6.7	5.8	3.6	1.6															
	COTTON SEED																						
23	Whole seeds with lint, heated (Amino acids from whole seeds with lint)		Conc	23	24.4	64.5	11.1	8.2	80	11.52	3.11	3.2	5.88	4.35	1.71	1.76	5.3	3.46	1.27	4.70	44.51	9.77	3.84
		N		5	6	6	6	6															
		SD		0	11	13.1	5.8	5.2															
	CRAMBE (*Crabme abyssinica*)																						
24	Meal, solvent, dehulled		Conc	49.4	56.0	42.0	2.0	18.4	90														
		N		1	1	1	1	1															
		SD																					
25	Meal, solvent, partly hulled		Conc	29.2	78.0	13.0	9.0	11.4	90														
		N		1	1	1	1	1															
		SD																					
	FABA BEANS																						
26	Seed, raw, cracked (Amino acids from 1998 Swine NRC)		Conc	31.4	67.0	33.0	0.0	3.9	90	8.98	2.64	4.06	7.44	6.38	0.79	1.26	4.06	3.5	0.87	4.49	43.21	14.77	1.83
		N		1	1	1	1	1															
		SD																					
	HEMP (*Cannabis sativa* L.)																						
27	Meal		Conc	32.1	6.5	90.1	3.4	2.9	85														
		N		1	1	1	1	1	1														
		SD																					
	LINSEED (Flax)																						
28	Meal, expellers (Amino acids from meal, solvent)		Conc	37.8	19.3	59.7	21	5.3	85	8.84	2.02	4.64	6.13	3.69	1.76	1.76	4.67	3.75	1.55	5.18	42.23	8.74	4.17
		N		1	1	1	1	1															
		SD																					
	LUPIN																						
29	Seed, cracked, raw		Conc	34.5	30.1	66.5	3.4	26.1	75	10.08	2.38	4.13	7.23	4.49	0.81	1.51	3.80	3.50	0.76	3.80	40.99	10.95	1.98
		N		7	7	7	7	7		9	9	9	9	9	9	9	9	9	9	9	9	9	9
		SD		2.4	27.3	24.9	4.6	21.3		1.1	0.35	0.13	0.24	0.25	0.09	0.38	0.18	0.15	0.04	0.15			
30	Seed, extruded (Amino acids from seed, cracked, raw)		Conc	37.9	41.3	57.9	0.8	4.6	95	10.08	2.38	4.13	7.23	4.49	0.81	1.51	3.80	3.50	0.76	3.80	40.99	10.95	1.98
		N		7	7	7	7	7															
		SD		2.7	23.7	24.2	0.6	2.2															
31	Silage, 45% NDF		Wet	16.0	39.8	47.2	13.0	24.0	75														
		N		1	1	1	1	1															
		SD																					

	MILK		Conc	38.5					95	3.37	2.84	5.13	9.84	7.71	2.49	0.79	4.88	4.41	1.37	6.32	48.36	15.94	5.15
32	Skim, dry powder	N		15						15	15	15	15	15	15	15	15	15	15	15	15	15	15	
		SD		1.5						0.2	0.14	0.24	0.39	0.48	0.14	0.05	0.18	0.22	0.02	0.17				
	PALM KERNEL																								
33	Byproduct meal		Conc	18.9	9.6	80.8	9.6	1.6	75																
		N		7	7	7	7	7																	
		SD		1.9	6.1	7.6	2.2	0.4																	
	PEAS																								
34	Field, raw		Conc	25.6	55.5	44.4	0.1	16.7	80	8.93	2.59	4.09	7.24	7.17	1.00	1.47	4.70	3.75	0.90	4.67	46.51	15.42	2.15
		N		2	5	5	5	5		77	77	77	77	77	77	77	77	77	77	77	77	77	77	
		SD		1.7	11.5	11.5	0.1	8.1		0.98	0.15	0.15	0.19	0.25	0.08	0.12	0.22	0.13	0.04	0.18				
35	Field, extruded (Amino acids from field, raw)		Conc	24.5	15.7	75.4	8.9	13.1	90	8.93	2.59	4.09	7.24	7.17	1.00	1.47	4.70	3.75	0.90	4.67	46.51	15.42	2.15
		N		4	4	4	4	4																
		SD		0.8	3.5	3.9	7	6.6																
	POULTRY LITTER		Conc	21.8	70.9	18.6	10.6	11.8	80															
		N		1	2	2	2	2																
		SD			0	0.4	0.4	8.8																
	RAPESEED																								
36	Meal, solvent		Conc	38.4	23.4	69.2	7.4	13.1	70	6.17	2.80	3.93	7.09	5.62	2.04	2.54	4.06	4.42	1.30	5.09	42.52	13.22	4.80
		N		6	6	6	6	6		268	268	268	268	268	268	268	268	268	268	268	268	268	268	
		SD		2.5	6.6	6.6	2.6	4.3		0.52	0.21	0.15	0.18	0.41	0.10	0.18	0.16	0.18	0.08	0.23				
37	Meal, solvent, heated (Amino acids from meal, solvent)		Conc	38.4	18.3	74.8	6.9	10.4	75	6.17	2.80	3.93	7.09	5.62	2.04	2.54	4.06	4.42	1.30	5.09	42.52	13.22	4.80
		N		6	6	6	6	6																
		SD		2.5	8	7.5	3.3	2.6																
	RYE		Conc	10.9					80	5.4	2.59	3.57	6.54	4.05	1.81	2.55	4.89	3.58	0.99	5.08	38.50	10.52	4.70
38	Grain	N		14						14	14	14	14	14	14	14	14	14	14	14				
		SD		1.5						0.38	0.21	0.28	0.37	0.36	0.13	0.19	0.31	0.24	0.06	0.36				
	SORGHUM, GRAIN TYPE																								
39	Grain, extruded (Amino acids from grain, dry rolled)		Conc	8.3	33.2	21.9	44.9	2.5	85	4.09	2.44	3.94	13.06	2.38	1.81	1.88	5.25	3.37	1.09	4.95	42.38	5.62	4.27
		N		1	1	1	1	1																
		SD																						
	SUNFLOWER																								
40	Meal, solvent, roasted (CP and amino acids from meal, solvent)		Conc	28.4	33.4	32.3	34.3	4.4	90	8.77	2.60	4.16	6.42	3.38	2.36	1.77	4.62	3.68	1.24	4.95	42.19	8.01	5.59
		N			6	6	6	6																
		SD			2.9	11	11.9	0.8																
41	Silage (Trp estimated)		Wet	12.5					70	6.67	2.18	3.44	5.38	2.99	1.92	1.74	3.88	3.12	1.24	4.16	35.02	8.54	5.48
		N								5	5	5	5	5	5	5	5	5		5	5	5	5	
		SD								0.87	0.38	0.18	0.34	0.16	0.09	0.20	0.18	0.11		0.31				
	TRITICALE																								
42	Grain, ground		Conc	14.5	51.3	45.9	2.8	43	90	5.29	2.53	3.59	6.82	3.62	1.79	2.45	4.78	3.35	1.04	4.78	37.59	9.63	4.76
		N		1						31	31	31	31	31	31	31	31	31	31	31	31	31	31	
		SD								0.28	0.51	0.66	0.74	0.46	0.20	0.35	0.80	0.40	0.12	0.65				
	WHEAT																								
43	Distillers grains, dried		Conc	42.3	21.1	76.9	2	26.1	80	2.59	3.16	3.53	6.12	1.55	1.41		4.43	3.05	1.09	4.54	31.47	4.93	4.48
		N		2	2	2	2	2		1	1	1	1	1	1		1	1	1	1	1	1	1	
		SD		1.8	2.1	2.5	0.4	0.8																

NOTE: Amino acid values are courtesy of Degussa Corporation; exceptions are values for wheat distillers grains (Rhone-Poulenc Animal Nutrition).

TABLE 15-3 Mineral Composition of Some Feedstuffs Commonly Fed to Dairy Cattle (all values on a dry basis)

Entry No.	Feed Name/Description	International Feed No.	Ash %	Ca %	P %	Mg %	K %	Na %	Cl %	S %	Co mg/kg	Cu mg/kg	I mg/kg	Fe mg/kg	Mn mg/kg	Se mg/kg	Zn mg/kg	Mo mg/kg
	ALFALFA *Medicago sativa*	Also see LEGUMES, FORAGE																
1	Meal, 17% CP	1-00-023	11.0	1.47	0.28	0.29	2.37	0.10	0.65	0.26	0.31	9	0.16	619	44	0.36	28	2.8
		N	84	206	206	206	206	110	17	72		110	1	110	110	2	110	110
		SD	2.3	0.36	0.07	0.06	0.42	0.08	0.27	0.04		4		617	20	0.04	19	1.2
	ALMOND																	
2	Hulls	4-00-359	6.1	0.28	0.13	0.13	2.62	0.02	0.03	0.04		7		247	22	0.07	22	1.0
		N	16	30	30	30	30	30	9	14		30		16	30	7	30	23
		SD	0.5	0.11	0.08	0.05	0.52	0.01	0.03	0.01		4		11	18	0.02	15	0.6
	APPLE																	
3	Pomace, wet	4-25-450	2.6	0.20	0.14	0.09	0.73	0.04	0.03	0.07		11		185	17		14	0.7
		N	16	54	54	54	54	54	3	18		54		54	54		54	54
		SD	1.1	0.11	0.03	0.03	0.25	0.04		0.01		5		190	18		10	0.5
	BAKERY BYPRODUCT																	
4	Byproduct meal	4-00-466	3.8	0.20	0.36	0.13	0.42	0.72	1.20	0.14	1.05	5		273	30	0.29	46	1.1
		N	71	168	168	168	168	168	13	41	1	168		168	168	5	168	168
		SD	1.6	0.20	0.24	0.10	0.26	0.50	0.73	0.05		4		330	27	0.21	50	0.7
5	Bread, waste	4-00-466	2.8	0.14	0.20	0.05	0.23	0.85	0.94	0.17		4		140	10		16	0.6
		N	10	57	57	57	57	57	5	21		57		57	57		57	57
		SD	1.4	0.10	0.06	0.06	0.06	0.33	0.41	0.03		8		170	3		6	0.6
6	Cereal byproduct	4-00-466	3.2	0.17	0.29	0.10	0.33	0.59	0.69	0.10		4		252	26		80	1
		N	21	48	48	48	48	48	5	24		48		48	48		48	48
		SD	1.3	0.27	0.16	0.05	0.16	0.27	0.39	0.03		1		164	16		47	0.5
7	Cookie byproduct	4-24-852	3.0	0.23	0.29	0.13	0.46	0.68	1.20	0.13		5		235	27		38	1.0
		N	5	29	29	29	29	29	1	20		29		29	29		29	29
		SD		0.28	0.16	0.13	0.17	0.46		0.08		5		288	20		31	0.7
	BARLEY																	
8	Grain, rolled	4-00-528	2.9	0.06	0.39	0.14	0.56	0.02	0.13	0.12	0.35	6		70	22	0.11	38	1.1
		N	257	319	321	287	287	229	31	139	16	241		253	241	519	241	237
		SD	0.8	0.02	0.06	0.02	0.12	0.02	0.07	0.01	0.28	3		60	12	0.09	30	0.6
9	Malt sprouts	5-00-545	7.4	0.24	0.51	0.18	1.19	0.04		0.29		9		353	49	0.67	65	2.0
		N	9	31	31	31	31	31		10		31		31	31	6	31	31
		SD	1.3	0.16	0.11	0.04	0.18	0.00		0.05		2		207	14	0.55	13	0.6
10	Silage, headed	3-00-512	7.5	0.48	0.30	0.18	2.43	0.13	0.72	0.17	0.72	7		343	43	0.12	30	1.6
		N	166	525	525	420	420	214	11	97	6	291		291	291	197	291	214
		SD	2.1	0.19	0.06	0.05	0.78	0.23	0.54	0.04	0.41	3		458	25	0.09	13	0.8
	BEET, SUGAR																	
11	Pulp, dried	4-00-669	7.3	0.91	0.09	0.23	0.96	0.31	0.18	0.30		11		642	62	0.14	22	1.5
		N	54	170	152	152	152	152	16	55		152		152	152	10	152	143
		SD	1.9	0.27	0.03	0.05	0.50	0.28	0.25	0.11		6		269	30	0.09	9	0.7
	BERMUDAGRASS *Cynodon dactylon*																	
12	Coastal, hay, early head	1-20-900	8.1	0.49	0.27	0.19	1.80	0.17	0.67	0.48		8		224	62		32	
		N	34	8	8	7	7	7	7	7		7		7	7		7	
		SD	1.9	0.07	0.03	0.05	0.34	0.10	0.22	0.10		10		126	25		15	
13	Tifton-85, hay, 3-4 wk growth (Data from Coastal hay, adj. for ash)	IFN	6.5	0.39	0.22	0.15	1.40	0.14	0.54	0.38		8		224	62		32	
		N	2															
		SD																
	BLOOD																	
14	Meal, ring dried	5-00-380	2.5	0.30	0.30	0.03	0.33	0.40	0.33	0.77		10		2453	9	0.77	33	0.6
		N	31	75	75	75	75	75	7	46		75		75	75	13	75	75
		SD	1.4	0.40	0.26	0.02	0.22	0.28	0.16	0.34		4		420	6	0.84	14	0.8
15	Meal, batch dried (Composition data from ring-dried)		2.5	0.30	0.30	0.03	0.33	0.40	0.33	0.77		10		2453	9	0.77	33	0.6
	BLUEGRASS *Poa pratensis*	See GRASSES, COOL SEASON																
	BREWERS GRAINS																	
16	Dried	5-12-024	4.3	0.30	0.67	0.26	0.50	0.04	0.07	0.38		11		224	45	1.06	85	3.2
		N	138	344	344	344	344	77	22	138		344		344	344	4	344	340
		SD	0.9	0.11	0.06	0.35	0.26	0.06	0.02	0.08		6		119	12	0.28	15	0.8
17	Wet	5-00-517	4.9	0.35	0.59	0.21	0.47	0.01	0.12	0.33		9		247	49	1.06	91	3.4
		N	110	427	427	427	427	13	1	190		389		389	389		389	389.0
		SD	1.1	0.22	0.10	0.26	0.26	0.01		0.06		7		270	13		17	1
	BROME, SMOOTH *Bromus inermis*	See GRASSES, COOL SEASON																
	CANARYGRASS, REED *Phalaris arundianacea*	See GRASSES, COOL SEASON																
	CANOLA																	
18	Seed	5-08-109	4.6	0.44	0.68	0.21	0.91	0.03		0.42		12		253	48		88	
		N	1	1	1	1	1	1		1		1		1	1		1	
		SD																

(continues)

TABLE 15-3 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	Ash %	Ca %	P %	Mg %	K %	Na %	Cl %	S %	Co mg/kg	Cu mg/kg	I mg/kg	Fe mg/kg	Mn mg/kg	Se mg/kg	Zn mg/kg	Mo mg/kg
19	Meal, mech. extracted	5-03-870	7.4	0.75	1.10	0.53	1.41	0.07	0.04	0.73		5		296	62	1.09	61	2.7
		N	27	79	79	79	79	79	9	32		29		79	79	19	79	79
		SD	1.2	0.11	0.20	0.07	0.13	0.10	0.01	0.19		3		251	12	0.99	7	0.6
	CHOCOLATE																	
20	Byproduct		2.1	0.22	0.30	0.22	1.18	0.07		0.11		15		461	31		40	1.6
		N	15	14	14	14	14	14		5		14		14	14		14	14
		SD	2.0	0.12	0.20	0.22	1.20	0.03		0.02		19		800	32		28	1.6
	CITRUS																	
21	Pulp dried	4-01-237	7.2	1.92	0.12	0.12	1.10	0.06	0.08	0.10		8		151	9		11	0.9
		N	35	90	90	90	90	90	18	47		90		90	90		57	90
		SD	4.2	0.53	0.03	0.01	0.16	0.06	0.05	0.03		3		145	3		3	0.5
	CLOVER, LADINO *Trifolium pratense*	See LEGUMES, FORAGE																
	CLOVER, RED *Trifolium pratense*	See LEGUMES, FORAGE																
	CORN, YELLOW																	
22	Cobs	1-28-234	2.2	0.10	0.06	0.06	0.90	0.04		0.07		6		254	5	0.08	11	0.13
		N	2	3	3	3	3	2		2		2		2	2	1	2	1
		SD																
23	Distillers grains with solubles, dried	5-28-236	5.2	0.22	0.83	0.33	1.10	0.30	0.26	0.44		8		178	27	0.39	65	1.9
		N	134	649	649	648	648	647	90	278		648		265	648	12	648	556
		SD	1.15	0.10	0.14	0.07	0.23	0.27	0.10	0.15		7		82	15	0.44	19	0.5
24	Gluten feed, dried	5-28-243	6.8	0.07	1.00	0.42	1.46	0.13	0.20	0.44		6		196	23	0.19	75	2.2
		N	25	144	144	144	144	83	2	65		144		144	144	12	144	131
		SD	1.5	0.08	0.23	0.11	0.33	0.12		0.09		3		103	9	0.11	16	0.7
25	Gluten meal, dried	5-28-242	3.3	0.06	0.60	0.14	0.46	0.05	0.11	0.86		4		138	15	0.34	49	1.1
		N	20	57	57	57	57	57	1	23		57		57	57	11	57	57
		SD	1.2	0.06	0.28	0.16	0.29	0.09		0.17		5		73	24	0.3	59	0.8
26	Grain, cracked, dry (Data from dry ground corn)	4-02-854	1.5	0.04	0.30	0.12	0.42	0.02	0.08	0.10		3		54	11	0.07	27	0.8
		N																
		SD																
27	Grain, ground, dry	4-02-854	1.5	0.04	0.30	0.12	0.42	0.02	0.08	0.10		3		54	11	0.07	27	0.8
			567	1185	1185	1185	1185	554	143	322		572		572	327	45.00	327	542.0
			0.5	0.07	0.05	0.03	0.06	0.08	0.07	0.01		4		53	24	0.05	20	0.5
28	Grain, steam-flaked (Data from dry ground corn)	4-02-854	1.5	0.04	0.30	0.12	0.42	0.02	0.08	0.10		3		54	11	0.07	27	0.8
29	Grain, rolled, high moisture (Data from ground high moisture corn)	4-28-265	1.5	0.03	0.30	0.12	0.43	0.01	0.05	0.10		1		59	7	0.07	21	0.7
		N																
		SD																
30	Grain, ground, high moisture	4-28-265	1.5	0.03	0.30	0.12	0.43	0.01	0.05	0.10		1		59	7	0.07	21	0.7
			2544	4633	4633	4633	4633	439	107	1317		853		853	853		853	694
			0.6	0.03	0.03	0.03	0.06	0.01	0.01	0.01		1		87	3		5	0.4
31	Grain and cob, dry, ground	4-02-849	1.7	0.06	0.29	0.13	0.49	0.03	0.07	0.10		3		91	10	0.07	27	0.8
		N	83	158	158	158	158	55	2	48		54		54	54		54	52.0
		SD	0.5	0.09	0.07	0.04	0.14	0.16		0.01		1		71	6		9	0.5
32	Grain and cob, high moisture	4-26-240	1.7	0.05	0.28	0.12	0.48	0.01	0.07	0.09		3		68	9	0.07	22	0.7
		N	1381	2608	2608	2608	2608	470	54	907		599		599	599		599	470
		SD	0.28	0.03	0.03	0.01	0.07	0.03	0.03	0.01		2		60	4		5	0.4
33	Hominy	4-02-887	2.7	0.03	0.65	0.26	0.82	0.01	0.10	0.12		3		87	14		49	1.2
		N	118	287	287	287	287	287	58	141		287		287	287		287	287
		SD	1.1	0.03	0.29	0.12	0.34	0.01	0.08	0.02		1		77	9		21	0.6
34	Silage, immature <25% DM	3-28-247	4.8	0.29	0.24	0.19	1.30	0.01	0.30	0.14		6		157	46	0.04	29	
		N	69	70	70	70	70	20	20			56		55	56		56	
		SD	2.1	0.10	0.10	0.10	0.50	0.01	0.15			2		130	18		10	
35	Silage, normal 32-38% DM	3-28-248	4.3	0.28	0.26	0.17	1.20	0.01	0.29	0.14		6		104	36	0.04	24	
		N	1027	1033	1033	1033	1033	6991	468	27		912		909	914	11	915	
		SD	1	0.10	0.04	0.04	0.30	0.01	0.10	0.02		7		109	19	0.02	8	
36	Silage, mature >40% DM	3-28-249	4.0	0.26	0.25	0.16	1.10	0.01	0.17	0.10		6		92	36	0.04	23	
		N	704	705	705	705	705	11	11	10		622		622	622		624	
		SD	1.3	0.10	0.04	0.04	0.30	0.00	0.06	0.01		2		79	17		7	
	COTTON SEED																	
37	Whole seeds with lint	5-01-614	4.2	0.17	0.60	0.37	1.13	0.02	0.06	0.23		7		94	18	0.14	37	1.3
		N	193	928	928	928	928	928	148	424		928		928	928	9	928	919
		SD	2.1	0.08	0.08	0.04	0.07	0.02	0.03	0.04		3		185	13	0.11	18	0.6

(continues)

TABLE 15-3 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	Ash %	Ca %	P %	Mg %	K %	Na %	Cl %	S %	Co mg/kg	Cu mg/kg	I mg/kg	Fe mg/kg	Mn mg/kg	Se mg/kg	Zn mg/kg	Mo mg/kg
38	Hulls	1-01-599	2.8	0.18	0.12	0.17	1.16	0.02	0.06	0.07		5		68	22		17	0.8
		N	75	118	118	112	113	109	11	68		106		107	102		105	102
		SD	0.5	0.10	0.06	0.04	0.07	0.03	0.03	0.03		3		61	8		11	0.5
39	Meal, solvent, 41% CP	5-01-630	6.7	0.20	1.15	0.61	1.64	0.07	0.07	0.40		14		149	24	0.30	67	3
		N	44	185	185	65	185	97	3	30		59		60	61	2	55	18.0
		SD	0.7	0.10	0.10	0.11	0.38	0.06		0.11		3		47	11		15	0.8
	FATS AND OILS																	
40	Calcium soaps	IFN	15.5	12.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		N																
		SD																
41	Hydrolyzed tallow fatty acids	IFN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		N																
		SD																
42	Partially hydrogenated tallow	IFN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		N																
		SD																
43	Tallow	IFN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		N																
		SD																
44	Vegetable oil	4-05-077	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		N																
		SD																
	FEATHERS																	
45	Meal		3.5	0.33	0.50	0.22	0.33	0.34	0.26	1.39	0.04	10	0.04	76	10	0.69	111	
		N																
		SD																
46	Meal with some viscera	5-13-540	5.5	1.36	0.77	0.06	0.24	0.27	0.47	1.75		12		625	12	0.69	100	0.8
		N	12	29	29	29	29	29	1	24		29		29	29	1	29	29
		SD	2.1	1.75	0.90	0.05	0.13	0.14		0.50		6		372	36		9	0.5
	FESCUE *Festuca sp.*	See GRASSES, COOL SEASON																
	FISH BYPRODUCTS																	
47	Anchovy, meal, mech.	5-01-985	16.0	4.06	2.69	0.27	0.79	0.96	0.80	0.78		10	3.41	234	12	1.47	114	0.2
		N	47	51	52	32	35	32		4		27	2	28	31	27	31	1
		SD	1.5	0.54	0.45	0.05	0.27	0.33		0.23		2		63	6	0.25	17	
48	Menhaden, meal, mech.	5-02-009	19.7	5.34	3.05	0.20	0.74	0.68	0.80	1.16		7	1.19	562	32	2.26	112	1.8
		N	113	112	111	63	65	66	2	34		64	2	65	65	30	62	46
		SD	2.4	1.15	0.53	0.05	0.25	0.27		1.01		4		354	23	1.5	24	0.9
	GRASSES, COOL SEASON																	
49	Pasture, intensively managed	2-02-260	9.8	0.56	0.44	0.20	3.36	0.02	0.56	0.20		10		275	75		36	
		N	13	13	13	13	13	1				13		13	13		13	
		SD	1.2	0.15	0.06	0.03	0.49					3		209	36		6	
50	Hay, all samples	1-02-250	7	0.58	0.23	0.20	2.01	0.04	0.50	0.21		9		156	72	0.06	31	1.5
		N	1791	4653	4653	4653	4653	1321	161	1448		1321		1321	1321	5	1321	1321
		SD	1.5	0.23	0.06	0.05	0.53	0.08	0.32	0.06		6		157	52	0.06	30	1
51	Hay, immature <55% NDF	1-02-212	9.2	0.72	0.34	0.23	2.57	0.03	0.42	0.24		9		199	84	0.06	27	
		N	34	42	42	42	42	4	3	5		8		8	8		8	
		SD	1.1	0.23	0.07	0.06	0.56	0.03	0.49	0.03		3		93	20		8	
52	Hay, mid-maturity 55-60% NDF	1-02-243	8.8	0.66	0.29	0.23	2.13	0.08	0.92	0.24		9		194	72	0.06	25	
		N	50	54	54	54	54	8	1	7		23		23	23		23	
		SD	1.6	0.23	0.13	0.11	0.72	0.06		0.15		4		146	26		7	
53	Hay, mature >60% NDF	1-02-244	7.0	0.47	0.26	0.18	1.97	0.02	0.66	0.17		8		180	90	0.06	25	
		N	399	413	413	413	413	51	49	56		342		342	342		342	
		SD	1.7	0.18	0.07	0.08	0.59	0.06	0.67	0.04		3		233	51		8	
54	Silage, all samples	3-02-222	8.1	0.55	0.29	0.23	2.54	0.05	0.67	0.21		9		331	74	0.09	30	2.2
		N	988	4365	4365	4365	4365	839	118	1388		879		879	879	3	879	879
		SD	2.1	0.28	0.08	0.05	0.73	0.07	0.38	0.05		3		324	47		12	1.4
55	Silage, immature <55% NDF	3-02-217	9.9	0.57	0.36	0.22	3.11	0.05	0.67	0.21		9		280	56	0.09	31	
		N	34	35	35	35	35					11		11	11		11	
		SD	1.8	0.19	0.07	0.05	0.62					3		159	20		10	
56	Silage, mid-maturity 55-60% NDF	3-02-218	8.7	0.60	0.36	0.21	2.78	0.05	0.67	0.21		9		275	79	0.09	31	
		N	41	41	41	41	41					35		35	35		35	
		SD	1.5	0.21	0.07	0.04	0.71					2		181	35		9	

(continues)

TABLE 15-3 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	Ash %	Ca %	P %	Mg %	K %	Na %	Cl %	S %	Co mg/kg	Cu mg/kg	I mg/kg	Fe mg/kg	Mn mg/kg	Se mg/kg	Zn mg/kg	Mo mg/kg
57	Silage, mature >60% NDF	3-02-219	8.0	0.56	0.31	0.20	2.42	0.05	0.89	0.20		9		327	90	0.09	30	
		N	135	135	135	135	135		5	7		128		127	128		128	
		SD	1.8	0.20	0.07	0.06	0.72		0.32	0.04		3		396	45		8	
	GRASS-LEGUME MIXTURES Predominantly Grass (17-22% Hemicellulose)																	
58	Hay, immature <51% NDF	1-02-275	9.2	1.01	0.31	0.26	2.83	0.03	0.74	0.28		9		117	53	0.09	25	
		N	21	21	21	21	21					14		14	14		14	
		SD	1.2	0.32	0.06	0.08	0.65					3		110	17		3	
59	Hay, mid maturity 51-57% NDF	1-02-277	9.5	0.88	0.36	0.25	2.45	0.01	0.77	0.27		9		358	75	0.09	26	
		N	155	155	155	155	155	52	9	3		124		124	124		124	
		SD	1.7	0.22	0.07	0.05	0.74	0.01	0.41	0.02		2		302	20		5	
60	Hay, mature >57% NDF	1-02-280	7.9	0.73	0.27	0.21	2.09	0.10	0.71	0.29		8		124	74	0.09	24	
		N	149	149	149	149	149	14	8	9		98		98	98		98	
		SD	1.4	0.73	0.06	0.06	0.66	0.21	0.50	0.04		3		271	46		5	
61	Silage, immature <51% NDF	3-02-302	9.1	1.02	0.34	0.25	2.88	0.03	0.74	0.27		9		234	74	0.11	27	
		N	18	18	18	18	18					17		17	17		17	
		SD	1.3	0.31	0.05	0.05	0.44					2		217	31		5	
62	Silage, mid-maturity 51-57% NDF	3-02-265	9.5	0.89	0.36	0.26	2.64	0.01	0.45	0.25		9		264	78	0.11	30	
		N	95	95	95	95	95		2	3		85		85	85		85	
		SD	1.6	0.26	0.06	0.07	0.73			0.02		2		325	30		8	
63	Silage, mature >57% NDF	3-02-266	9.0	0.85	0.33	0.23	2.51	0.10	0.90	0.34		9		241	73	0.11	28	
		N	166	166	166	166	166		4			151		151	151		151	
		SD	1.5	0.22	0.06	0.06	0.61		0.33			2		321	35		6	
	Mixed Grass and Legume (12-15% Hemicellulose)																	
64	Hay, immature <47% NDF	1-02-275	8.8	1.20	0.31	0.29	3.06	0.07	0.50	0.27		10		160	59	0.12	24	
		N	42	42	42	42	42	3	1	6.00		27		27	27		27	
		SD	0.9	0.26	0.04	0.06	0.62	0.06		0.10		3		452	18		8	
65	Hay, mid-maturity 47-53% NDF	1-02-277	9.3	1.04	0.32	0.25	2.59	0.03	0.80	0.24		9		197	59	0.12	25	
		N	184	184	184	184	184	23	3	11		115		115	115		115	
		SD	1.4	0.18	0.06	0.05	0.64	0.06	0.24	0.03		2		247	20		5	
66	Hay, mature >53% NDF	1-02-280	9.9	0.97	0.37	0.26	2.24	0.01	0.93	0.28		9		403	75	0.12	27	
		N	233	233	233	233	233	128	16	6		195		195	195		195	
		SD	1.6	0.17	0.08	0.04	0.85	0.01	0.14	0.04		2		249	19		5	
67	Silage, immature <47% NDF	3-02-302	9.8	1.08	0.35	0.28	2.89	0.01	1.77	0.16		9		328	71	0.14	29	
		N	45	45	45	45	45	1	1	3		2		36	36		36	
		SD	1.7	0.30	0.06	0.07	0.72			0.05		36		202	25		7	
68	Silage, mid-maturity 47-53% NDF	3-02-265	10.1	1.09	0.35	0.27	2.80	0.01	1.10	0.26		9		252	71	0.14	31	
		N	171	171	171	171	171	1	2	9		139		139	139		139	
		SD	1.5	0.26	0.05	0.06	0.63			0.10		3		219	26		9	
69	Silage, mature <47% NDF	3-02-266	9.6	1.06	0.33	0.24	2.70	0.02	0.52	0.31		9		262	72	0.14	30	
		N	255	255	255	255	255	2	3	5		210		210	210		210	
		SD	1.3	0.27	0.05	0.06	0.59		0.30	0.07		2		317	26		13	
	Predominantly Legume (10-13.5% Hemicellulose)																	
70	Hay, immature <44% NDF	1-02-275	9.2	1.30	0.30	0.30	2.41	0.03	0.60	0.20		10		167	58	0.15	24	
		N	157	157	157	157	157			4.00		40		40	40		40	
		SD	1.4	0.18	0.04	0.06	0.49			0.06		6		165	18		6	
71	Hay, mid-maturity 44-50% NDF	1-02-277	9.1	1.17	0.30	0.27	2.34	0.08	0.43	0.26		9		141	49	0.15	24	
		N	296	296	296	296	296	8	1	13		103		103	103		103	
		SD	1.2	0.15	0.04	0.06	0.46	0.03		0.02		3		131	16		6	
72	Hay, mature >50% NDF	1-02-280	8.7	1.09	0.28	0.25	2.23	0.01	0.21	0.26		8		141	43	0.15	24	
		N	134	134	134	134	134	2	2	15		60		60	60		60	
		SD	1.4	0.17	0.04	0.04	0.51	0.01		0.04		2		299	15		6	
73	Silage, immature <44% NDF	3-02-302	11.5	1.16	0.36	0.30	2.95	0.01	0.60	0.32		11		279	70	0.17	36	
		N	193	193	193	193	193	4		4		31		31	31		31	
		SD	2.1	0.20	0.05	0.06	0.61	0.07		0.09		4		206	20		15	

(continues)

TABLE 15-3 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	Ash %	Ca %	P %	Mg %	K %	Na %	Cl %	S %	Co mg/kg	Cu mg/kg	I mg/kg	Fe mg/kg	Mn mg/kg	Se mg/kg	Zn mg/kg	Mo mg/kg
74	Silage, mid-maturity 44-50% NDF	3-02-265	10.8	1.14	0.34	0.28	2.88	0.01	0.60	0.25		9		244	64	0.17	28	
		N	504	505	505	505	505	5		17		185		185	185		185	
		SD	1.6	0.21	0.04	0.06	0.52	0.08		0.06		2		231	21		6	
75	Silage, mature >50% NDF	3-02-266	10.2	1.17	0.33	0.26	2.77	0.03	0.60	0.26		9		339	66	0.17	29	
		N	339	339	339	339	339	4		13		240		240	240		240	
		SD	1.8	0.24	0.06	0.06	0.60	0.03		0.04		3		379	23		8	
	LEGUMES, FORAGE																	
76	Pasture, intensively managed	2-29-431	10	1.31	0.37	0.28	3.21	0.01	0.60	0.31	0.44	10		215	54	0.20	33	2.3
		N	11	24	24	24	24	11	1	7	6	20		20	20		20	11
		SD	1.4	0.36	0.08	0.09	0.94	0.11		0.06	0.05	5		120	27		8	1.7
77	Hay, all samples	1-20-648	10.0	1.52	0.26	0.30	2.53	0.01	0.74	0.25	0.65	9		286	35	0.20	24	2.9
		N	4527	11212	11272	11212	11212	4242	565	4250	38	4242		4242	4242	902	4242	4242
		SD	1.2	0.27	0.05	0.06	0.49	0.12	0.39	0.05	0.34	4		270	13	0.18	19	1.6
78	Hay, immature <40% NDF	1-07-792	9.5	1.56	0.31	0.33	2.56	0.03	0.55	0.33	0.65	10		213	49	0.20	26	
		N	159	210	210	210	210			41		42		42	42		42	
		SD	1.3	0.27	0.04	0.06	0.47			0.06		2		135	17		6	
79	Hay, mid-maturity 40- 46% NDF	1-07-788	9.4	1.37	0.30	0.30	2.45	0.02	0.61	0.31	0.65	9		207	46	0.20	24	
		N	262	296	296	296	296			26		56		56	56		56	
		SD	1.1	0.20	0.04	0.06	0.41			0.07		2		113	14		5	
80	Hay, mature >46% NDF	1-07-789	9.2	1.22	0.28	0.27	2.38	0.02	0.48	0.23	0.65	9		250	44	0.2	24	
		N	205	237	237	237	237			21		53		53	53		53	
		SD	1.6	0.21	0.04	0.05	0.49			0.08		2		299	17		6	
81	Silage, all samples	3-07-796	10.4	1.34	0.32	0.27	2.87	0.06	0.62	0.24	0.65	10		367	50	0.18	29	2.4
		N	5183	8479	8479	8479	8479	2729	374	3255	2	2729		2729	2729	199	2729	2729
		SD	1.7	0.26	0.06	0.05	0.59	0.09	0.33	0.04	0.15	3		490	22	0.17	8	1.3
82	Silage, immature <40% NDF	3-07-795	11.1	1.39	0.36	0.30	3.03	0.03	0.55	0.30	0.65	9		401	67	0.18	31	
		N	322	322	322	322	322	36	36	16		171		171	171		171	
		SD	1.5	0.21	0.05	0.06	0.57	0.02	0.30	0.06		3		353	24		7	
83	Silage, mid-maturity 40-46% NDF	3-07-797	10.8	1.36	0.35	0.28	3.00	0.02	0.61	0.28	0.65	9		395	64	0.18	30	
		N	749	750	750	750	750	48	48	20		607		610	610		610	
		SD	1.5	0.23	0.05	0.05	0.56	0.01	0.41	0.05		3		311	26		8	
84	Silage, mature >46% NDF	3-07-798	10.3	1.3	0.33	0.26	2.87	0.02	0.48	0.28	0.65	9		403	63	0.18	29	
		N	731	731	731	731	731	81	81	9		607		610	610		610	
		SD	1.6	0.23	0.05	0.05	0.58	0.01	0.3	0.05		2		311	26		8	
85	LINSEED (Flax)																	
	Meal, solvent	5-30-288	6.5	0.40	0.83	0.55	1.22	0.09		0.37		19		369	39	1.05	69	2.0
		N	1	5	5	5	5	5		2		5		5	5	10	5	5
		SD														0.63		0.6
	MEAT																	
86	Meal, rendered	5-09-323	22.9	8.86	4.20	0.26	0.49	0.78	0.44	0.51		21		701	26	0.45	114	2.4
		N	12	62	62	62	62	62		29		62		62	10	34	10	62
		SD	5.6	2.58	1.14	0.27	0.16	0.31		0.13		8		560	33	0.68	82	1.9
87	Meat and bone, rendered	5-00-388	30.4	10.60	4.73	0.24	1.02	0.71	0.44	0.39		10		602	22		94	2.7
		N	13	51	51	51	51	51	2	13		51		51	51		51	51
		SD	7.5	2.35	1.06	0.05	0.12	0.16		0.08		4		322	8		17	2.3
	MOLASSES																	
88	Beet sugar	4-00-668	11.4	0.15	0.03	0.29	6.06	1.48		0.60		22		87	66		18	0.5
		N	9	13	11	10	10	8		9		7		8	7		5	1
		SD	1.3	0.05	0.01	0.01	0.29	0.08		0.05		1		25	12		0	
89	Sugarcane	4-04-696	13.3	1.00	0.10	0.42	4.01	0.22		0.47		66		263	59		21	1.6
		N	52	32	31	12	16	9		9		8		11	11		5	4
		SD	2.3	0.18	0.02	0.10	0.88	0.02		0.02		26		34	6		6	0.7
	OATS																	
90	Grain, rolled	4-03-309	3.3	0.11	0.40	0.16	0.52	0.03		0.19	0.06	8		106	43	0.48	41	1.7
		N	104	221	228	205	204	101		30	8	183		184	193	68	196	156
		SD	0.5	0.05	0.06	0.02	0.09	0.07		0.02	0.02	4		62	16	0.30	10	0.7
91	Hay, headed	1-09-099	8.5	0.37	0.22	0.17	2.01	0.33	1.08	0.14		8		250	59		23	1.6
		N	22	403	403	403	403	403	51	180		403		403	403		403	403
		SD	4.0	0.22	0.07	0.06	0.71	0.28	0.51	0.06		3		370	28		27	1.0
92	Silage, headed	3-21-843	9.8	0.52	0.31	0.20	2.89	0.24	1.34	0.19		9		500	66		29	2.2
		N	182	615	615	615	615	207	28	194		212		212	212		212	212
		SD	2.3	0.21	0.07	0.05	0.77	0.30	0.91	0.05		4		595	30		9	1.3
	ORCHARDGRASS *Dactylis glomerata*	see GRASSES, COOL SEASON																

(continues)

TABLE 15-3 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	Ash %	Ca %	P %	Mg %	K %	Na %	Cl %	S %	Co mg/kg	Cu mg/kg	I mg/kg	Fe mg/kg	Mn mg/kg	Se mg/kg	Zn mg/kg	Mo mg/kg
	PEANUT																	
93	Meal, solvent	5-08-605	5.8	0.20	0.64	0.32	1.32	0.03	0.10	0.32		13	0.07	302	33	0.21	54	3.8
		N	11	15	16	14	15	14	1	8		14	1	14	14	1	14	14
		SD	1.5	0.15	0.06	0.03	0.08	0.04		0.02		3		115	5		11	2
	POTATO																	
94	Byproduct meal	4-03-775	12.8	0.49	0.29	0.11	1.04	0.26	0.19	0.11		11		1006	26		25	1.6
		N	22	72	72	72	64	64	5	33		72		72	72		72	64
		SD	7.4	0.77	0.32	0.05	0.84	0.34	0.21	0.08		10		608	20		10	1.2
	RICE																	
95	Bran	4-03-928	10.4	0.07	1.78	0.81	1.57	0.03	0.09	0.19		10		239	186	0.17	71	2.8
		N	69	69	69	61	66	54	2	26		57		57	23	8	55	32
		SD	1.9	0.06	0.36	0.17	0.24	0.02		0.02		6		266	62	0.09	20	0.7
	RYE, ANNUAL																	
96	Silage, vegetative	3-21-853	9.6	0.43	0.42	0.16	3.34	0.05	0.90	0.20		9		373	63		32	2.0
		N	844	1155	1155	1155	1155	563	24	240		859		859	859		859	722
		SD	3.9	0.16	0.08	0.10	0.66	0.08	0.51	0.05		5		446	34		8	1.2
	RYEGRASS *Lolium sp.*	see GRASSES, COOL SEASON																
	SAFFLOWER																	
97	Meal, solvent	5-04-110	4.7	0.38	0.72	0.39	1.21	0.04		0.32		22		319	30		77	2.3
		N	1	5	5	5	5	5		2		5		5	5		5	5
		SD		0.04	0.08	0.04	0.06	0.04				4		53	4		5	0.8
	SORGHUM, GRAIN TYPE																	
98	Grain, dry rolled	4-04-380	2	0.07	0.35	0.17	0.47	0.01	0.06	0.11		6		89	21	0.46	25	1.0
		N	74	78	77	75	66	38	7	20		64		74	72	3	51	38
		SD	0.6	0.04	0.07	0.05	0.16	0.01	0.02	0.03		2		61	4	0.58	4	0.7
99	Grain, steam-flaked (Data from dry-rolled sorghum)	4-04-380	2	0.07	0.35	0.17	0.47	0.01	0.06	0.11		6		89	21	0.46	25	1.0
100	Silage	3-22-371	7.5	0.50	0.21	0.27	1.75	0.02	0.60	0.12		9		392	65	0.03	31	1.9
		N	181	1097	1097	1097	1097	865	26	317		865		805	865	2	298	298
		SD	2.9	0.26	0.08	0.09	0.70	0.04	0.19	0.03		6		309	56	0.01	18	1.4
	SORGHUM, SUDAN TYPE																	
101	Hay	1-04-480	8.7	0.54	0.20	0.32	2.36	0.03	1.16	0.13		10		284	44		34	2.3
		N	172	681	681	681	681	528	102	329		528		528	528		528	528
		SD	2.2	0.21	0.06	0.09	0.71	0.06	0.42	0.03		5		307	11		12	0.9
102	Silage	3-04-499	10.9	0.64	0.24	0.31	2.57	0.03	0.56	0.15		11		990	79		33	2.7
		N	37	131	131	131	131	63	5	53		63		63	63		63	63
		SD	3.2	0.41	0.07	0.08	0.97	0.05	0.22	0.05		6		796	72		15	2.2
	SOYBEAN																	
103	Hulls	1-04-560	4.8	0.63	0.17	0.25	1.51	0.01	0.05	0.12	0.12	10		604	26	0.21	35	1.6
		N	45	81	79	73	71	75	5	37	1	72		73	74	4	73	67
		SD	0.7	0.07	0.07	0.03	0.14	0.02	0.03	0.04		2		249	8	0.10	6	0.7
104	Meal, expellers, 45% CP	5-12-820	5.5	0.36	0.66	0.30	2.12	0.04	0.10	0.34		17	0.12	169	39		72	3.8
		N	20	64	64	64	64	64	9	15		64	1	64	64		64	64
		SD	0.9	0.23	0.08	0.17	0.39	0.04	0.09	0.06		4		115	7		30	2
105	Meal, nonenzymatically browned		6.8	0.39	0.75	0.30	2.32	0.10		0.40		15		111	38		54	3.0
		N	8	14	14	14	14	14		14		14		14	14		14	14
		SD	0.6	0.08	0.05	0.01	0.08	0.03		0.03		1		9	6		6	0.5
106	Meal, solvent, 44% CP	5-20-637	6.6	0.40	0.71	0.31	2.22	0.04	0.13	0.46		22		185	35	0.21	57	0.1
		N	66	26	29	19	21	12		6		15		15	15	42	13	1
		SD	0.6	0.11	0.04	0.03	0.24	0.03		0.04		8		39	3	0.16	7	
107	Meal, solvent, 48% CP	5-20-638	6.4	0.35	0.70	0.29	2.41	0.03	0.13	0.39		16		206	40	0.13	58	5.9
		N	119	256	256	243	246	237	96	142		243		237	237	34	237	237
		SD	0.7	0.10	0.08	0.03	0.25	0.25	0.65	0.05		4		124	12	0.19	17	2.5
108	Seeds, whole	5-04-610	5.9	0.32	0.60	0.25	1.99	0.01	0.04	0.31		13		148	29	0.28	49	3.8
		N	7	27	27	27	27	27	2	12		27		27	27	6	27	27
		SD	0.4	0.19	0.12	0.04	0.29	0.02		0.06		3		85	6	0.15	7	2.8
109	Seeds, whole roasted	5-04-597	5.0	0.26	0.64	0.25	1.99	0.01	0.06	0.32		15		142	29	0.28	48	5.3
		N	32	106	106	106	106	106	15	70		106		106	106		50	106
		SD	0.5	0.07	0.08	0.03	0.18	0.02	0.03	0.05		3		98	8		9	4.0
110	Silage, early maturity	3-04-579	12.2	1.07	0.37	0.35	2.25	0.01		0.22		14		656	75		42	3.1
		N	3	18	18	18	18	18		3		9		9	9		9	9
		SD		0.29	0.13	0.07	0.80	0.01				4		263	30		11	1.4
	SUNFLOWER																	
111	Meal, solvent	5-30-032	7.7	0.48	1.00	0.63	1.50	0.04	0.12	0.39		32		298	45	0.50	88	2.7
		N	20	23	23	19	19	14	1	9		12		12	12	1	12	12
		SD	0.4	0.17	0.25	0.10	0.24	0.03		0.10		20		70	5		8	0.8
112	Oil seeds, whole	5-08-530	5.1	0.71	0.51	0.34	1.06	0.01		0.21		20		144	35		53	1.8
		N	5	6	6	6	6	6		4		6		6	6		6	6
		SD	1.5	0.47	0.18	0.06	0.69	0.01		0.03		7		46	10		21	0.8
	TIMOTHY *Phleum pratense*	See GRASSES, COOL SEASON																

(continues)

TABLE 15-3 *(continued)*

Entry No.	Feed Name/Description	International Feed No.	Ash %	Ca %	P %	Mg %	K %	Na %	Cl %	S %	Co mg/kg	Cu mg/kg	I mg/kg	Fe mg/kg	Mn mg/kg	Se mg/kg	Zn mg/kg	Mo mg/kg
	TREFOIL, BIRDSFOOT *Lotus corniculatus*	See LEGUMES, FORAGE																
	TOMATO																	
113	Pomace	5-05-042	5.5	0.22	0.47	0.28	0.98	0.12		0.15		11		541	11		54	1.8
		N	3	10	10	9	9	9		6		9		9	9		9	9
		SD	1.9	0.11	0.20	0.07	0.26	0.23		0.06		3		574	3		10	0.3
	TRITICALE																	
114	Silage, headed	3-26-208	9.7	0.57	0.33	0.19	3.01	0.05		0.21		7		404	66		37	1.8
		N	41	107	107	107	107	40		25		60		60	60		47	40
		SD	3.8	0.30	0.07	0.06	0.88	0.08		0.06		2		323	34		12	1
	WHEAT																	
115	Bran	4-05-190	6.3	0.13	1.18	0.53	1.32	0.04	0.16	0.21		11		157	122	0.50	85	2.5
		N	43	44	43	31	31	27	4	16		22		24	22	7	20	14
		SD	1.6	0.03	0.23	0.09	0.16	0.01	0.03	0.03		2		51	29	0.37	27	0.9
116	Grain, rolled	4-13-245	2.0	0.05	0.43	0.15	0.50	0.01	0.11	0.15		5		72	42	0.28	40	1.3
		N	39	135	136	61	61	22	3	35		56		56	56	35	55	40
		SD	0.3	0.03	0.14	0.03	0.14	0.01	0.03	0.03		3		55	17	0.37	13	0.8
117	Hay, headed	1-05-170	6.7	0.31	0.20	0.13	1.71	0.06	0.38	0.13		8		319	62		25	1.4
		N	10	110	110	110	110	110	20	44		110		110	110		110	110
		SD	1.5	0.18	0.07	0.04	0.72	0.12	0.24	0.05		4		419	36		13	1.5
118	Middlings	4-05-205	5	0.16	1.02	0.42	1.38	0.03	0.10	0.18		10		158	125	0.46	91	2.5
		N	87	195	196	181	182	170	16	58		176		177	175	9	171	165
		SD	0.8	0.15	0.20	0.11	0.18	0.03	0.02	0.05		4		80	27	0.42	24	0.8
119	Silage, early head	3-21-865	8.6	0.38	0.29	0.16	2.28	0.07	0.83	0.17		7		391	72		27	1.7
		N	211	223	459	459	459	249	36	179		322		322	322		322	249
		SD	2.6	0.16	0.08	0.05	0.69	0.13	0.49	0.05		4		399	36		10	1.0
120	Straw	1-05-175	7.6	0.31	0.10	0.14	1.55	0.12	0.60	0.11		6		172	67		16	1.3
		N	64	137	134	123	125	91	8	41		120		121	69		116	88
		SD	2.8	0.22	0.05	0.08	0.62	0.23	0.35	0.04		4		113	81		7	1.5
	WHEY																	
121	Wet, cattle	4-08-134	3.1	1.37	1.04	0.22	3.32	1.40	2.41	1.15		2		131	4	0.06	16	1.3
		N	16	58	58	58	58	58	16	18		58		58	58	11	33	9
		SD	2.7	1.20	0.70	0.13	0.84	2.55	3.70	1.42		7		195	5	0.06	24	2.7

TABLE 15-4 Compositions of Inorganic Mineral Sources and Element Absorption Coefficients for Dairy Cattle on a 100% Dry Matter Basis

Mineral Element Source	International Feed No.[a]	Dry Matter[b]	Crude Protein Equivalent (CPE) = N% x 6.25	Primary Mineral Element Content	Absorption Coefficient (AC) of Primary Element
Calcium Sources		*(DM%)*	*(CPE%)*	*Ca (%)*	*AC of Ca*
Bone meal, steamed, fg[c]	6-00-400	97	13.2	30.71	0.95
Calcium carbonate, $CaCO_3$, fg	6-01-069	100	—[d]	39.39	0.75
Calcium chloride anhydrous, $CaCl_2$, cp[e,g]	NA[f]	100	—	36.11	0.95
Calcium chloride dihydrate, $CaCl_2 \cdot 2H_2O$, cp[g]	NA	100	—	27.53	0.95
Calcium hydroxide, $Ca(OH)_2$, cp	NA	100	—	54.09	0.55
Calcium oxide, CaO, cp[g]	NA	100	—	71.47	0.50
Calcium phosphate (monobasic), $Ca(H_2PO_4)_2$, from defluorinated phosphoric acid, fg	6-01-082	97	—	16.40	0.95
Calcium sulfate dihydrate, $CaSO_4 \cdot 2H_2O$, cp	6-01-089	97	—	23.28	0.70
Curacao, phosphate, fg	6-05-586	99	—	34.34	0.70
Dicalcium phosphate (dibasic), $CaHPO_4$, from defluorinated phosphoric acid, fg	6-01-080	97	—	22.00	0.94
Dolomitic limestone (magnesium), fg	6-02-633	99	—	22.30	0.60
Limestone, ground, fg	6-02-632	100	—	34.00	0.70
Magnesium oxide, MgO, fg	6-02-756	98	—	3.07	0.70
Oystershell, flour (ground), fg	6-03-481	99	—	38.00	0.75
Phosphate, defluorinated, fg	6-01-780	100	—	32.00	0.70
Phosphate rock, fg	6-03-945	100	—	35.00	0.30
Phosphate rock, low-fluorine, fg	6-03-946	100	—	36.00	0.30
Soft rock phosphate colloidal clay, fg	6-03-947	100	—	17.00	0.30
Phosphorus Sources		*(DM%)*	*(CPE%)*	*P (%)*	*AC of P*
Ammonium phosphate (dibasic), $(NH_4)_2HPO_4$, fg	6-00-370	97	115.9	20.60	0.80
Ammonium phosphate (monobasic), $(NH_4)H_2PO_4$, fg	6-09-338	97	70.9	24.74	0.80
Bone meal, steamed, fg	6-00-400	97	13.2	12.86	0.80
Calcium phosphate (monobasic), $Ca(H_2PO_4)_2$, from defluorinated phosphoric acid, fg	6-01-082	97	—	21.60	0.80
Curacao, phosphate, fg	6-05-586	99	—	14.14	0.85
Dicalcium phosphate (dibasic), $CaHPO_4$, from defluorinated phosphoric acid, fg	6-01-080	97	—	19.30	0.75
Phosphate, defluorinated, fg	6-01-780	100	—	18.00	0.65
Phosphate rock, fg	6-03-945	100	—	13.00	0.30
Phosphate rock, low-fluorine, fg	6-03-946	100	—	14.00	0.30
Phosphoric acid, -H_3PO_4, fg[g,l]	6-03-707	75	—	31.60	0.90
Sodium phosphate (monobasic) monohydrate, $NaH_2PO_4 \cdot H_2O$, fg	6-04-288	97	—	22.50	0.90
Sodium tripolyphosphate (meta- and pyro-phosphate) $Na_5P_3O_{10}$, fg	6-08-076	96	—	25.00	0.75
Soft rock phosphate, colloidal clay, fg	6-03-947	100	—	9.00	0.30
Sodium Sources		*(DM%)*	*(CPE%)*	*Na (%)*	*AC of Na*
Bone meal, steamed, fg	6-00-400	97	13.2	5.69	0.90
Phosphate, defluorinated, fg	6-01-780	100	—	4.90	0.90
Potassium chloride, KCl, fg	6-03-755	100	—	1.00	0.90
Sodium bicarbonate, $NaHCO_3$, fg	6-04-272	100	—	27.00	0.90
Sodium carbonate monohydrate, $Na_2CO_3 \cdot H_2O$, cp	NA	100	—	37.08	0.90
Sodium chloride, NaCl, fg	6-04-152	100	—	39.34	0.90
Sodium phosphate (monobasic) monohydrate, $NaH_2PO_4 \cdot H_2O$, fg	6-04-288	97	—	16.68	0.90
Sodium selenate decahydrate, $Na_2SeO_4 \cdot 10H_2O$, cp	NA	100	—	12.46	0.90
Sodium selenite, Na_2SeO_3, fg	6-26-013	98	—	26.60	0.90
Sodium sesquicarbonate dihydrate, $Na_2CO_3 + NaHCO_3 \cdot 2H_2O$, fg	NA	100	—	30.50	0.90
Sodium sulfate decahydrate, $Na_2SO_4 \cdot 10H_2O$, cp	6-04-292	97	—	14.27	0.90

(continues)

TABLE 15-4 *(continued)*

Mineral Element Source	International Feed No.[a]	Dry Matter[b]	Crude Protein Equivalent (CPE) = N% x 6.25	Primary Mineral Element Content	Absorption Coefficient (AC) of Primary Element
Sodium Sources *(continued)*		*(DM%)*	*(CPE%)*	*Na (%)*	*AC of Na*
Sodium tripolyphosphate(meta- and pyro-phosphate, $Na_5P_3O_{10}$, fg	6-08-076	96	—	31.00	0.90
Chloride Sources		*(DM%)*	*(CPE%)*	*Cl (%)*	*AC of Cl*
Ammonium chloride, cp	NA	100	163.63	66.28	0.90
Calcium chloride anhydrous, $CaCl_2$, cp[g]	NA	100	—	63.89	0.90
Calcium chloride dihydrate, $CaCl_2 \cdot 2H_2O$, cp[g]	NA	100	—	48.23	0.90
Cobalt dichloride hexahydrate, $CoCl_2 \cdot 6H_2O$, cp	NA	100	—	29.80	0.90
Cupric chloride dihydrate, $CuCl_2 \cdot 2H_2O$, cp	NA	100	—	41.65	0.90
Magnesium chloride hexahydrate, $MgCl_2 \cdot 6H_2O$, cp	NA	100	—	34.88	0.90
Manganese dichloride, $MnCl_2$, cp	NA	100	—	56.34	0.90
Manganese chloride tetrahydrate, $MnCl_2 \cdot 4H_2O$, cp	NA	100	—	35.80	0.90
Potassium chloride, KCl, fg	6-03-755	100	—	47.30	0.90
Sodium chloride, NaCl, fg	6-04-152	100	—	60.66	0.90
Zinc chloride, $ZnCl_2$, cp	NA	100	—	52.03	0.90
Potassium Sources		*(DM%)*	*(CPE%)*	*K (%)*	*AC of K*
Potassium bicarbonate, $KHCO_3$, cp	6-29-493	99	—	39.05	0.90
Potassium carbonate, K_2CO_3, cp	NA	100	—	56.58	0.90
Potassium chloride, KCl, fg	6-03-755	100	—	50.00	0.90
Potassium iodide, KI, fg	6-03-759	100	—	21.00	0.90
Potassium sulfate, K_2SO_4, fg	6-06-098	98	—	41.84	0.90
Magnesium Sources		*(DM%)*	*(CPE%)*	*Mg (%)*	*AC of Mg*
Dolomitic limestone (magnesium), fg	6-02-633	99	—	9.99	0.30
Limestone, ground, fg	6-02-632	100	—	2.06	0.30
Magnesium carbonate, $MgCO_3 \cdot Mg(OH)_2$, fg	6-02-754	98		30.81	0.35
Magnesium chloride hexahydrate, $MgCl_2 \cdot 6H_2O$, cp	NA	100	—	11.96	0.90
Magnesium hydroxide, $Mg(OH)_2$, cp	NA	100	—	41.69	0.70
Magnesium oxide, MgO, fg	6-02-756	98	—	56.20	0.70
Magnesium sulfate heptahydrate, $MgSO_4 \cdot 7H_2O$, fg	6-02-758	98	—	9.80	0.90
Sulfur Sources		*(DM%)*	*(CPE%)*	*S (%)*	*AC of S*
Ammonium phosphate (dibasic), $(NH_4)_2HPO_4$, fg	6-00-370	97	115.9	2.16	
Ammonium phosphate (monobasic), $(NH_4)H_2PO_4$, fg	6-09-338	97	70.9	1.46	
Ammonium sulfate, $(NH_4)_2SO_4$, fg	6-09-339	100	134.1	24.10	
Bone meal, steamed, fg	6-00-400	97	13.2	2.51	
Calcium phosphate (monobasic), $Ca(H_2PO_4)_2$, from defluorinated phosphoric acid, fg	6-01-082	97	—	1.22	
Calcium sulfate, dihydrate $CaSO_4 \cdot 2H_2O$, fg	6-01-089	97	—	18.62	
Cupric sulfate pentahydrate, $CuSO_4 \cdot 5H_2O$	6-01-720	100	—	12.84	
Dicalcium phosphate (dibasic), $CaHPO_4$, from defluorinated phosphoric acid, fg	6-01-080	97	—	1.14	
Ferrous sulfate heptahydrate, $FeSO_4 \cdot 7H_2O$, fg	6-20-734	98	—	12.35	
Magnesium sulfate heptahydrate, $MgSO_4 \cdot 7H_2O$, fg	NA	98	—	13.31	
Manganese sulfate monohydrate, $MnSO_4 \cdot H_2O$, cp	NA	100	—	18.97	
Manganese sulfate pentahydrate, $MnSO_4 \cdot 5H_2O$, cp	NA	100	—	13.30	

(continues)

TABLE 15-4 *(continued)*

Mineral Element Source	International Feed No.[a]	Dry Matter[b]	Crude Protein Equivalent (CPE) = N% x 6.25	Primary Mineral Element Content	Absorption Coefficient (AC) of Primary Element
Sulfur Sources *(continued)*		*(DM%)*	*(CPE%)*	*S (%)*	*AC of S*
Phosphoric acid, -H_3PO_4, fg[g]	6-03-707	75	—	1.55	
Potassium sulfate, K_2SO_4, fg	6-06-098	98	—	17.35	
Sodium sulfate decahydrate, $Na_2SO_4 \cdot 10H_2O$, cp	6-04-292	97	—	9.95	
Zinc sulfate monohydrate, $ZnSO_4 \cdot H_2O$, fg	6-05-555	99	—	17.68	
Cobalt Sources		*(DM%)*	*(CPE%)*	*Co (mg/kg)*	*AC of CO*
Cobalt carbonate, $CoCO_3$, fg	6-01-566	99	—	460,000	
Cobalt carbonate hexahydrate, $CoCO_3 \cdot 6H_2O$, cp	NA	100	—	259,000	
Cobalt dichloride hexahydrate, $CoCl_2 \cdot 6H_2O$, cp	NA	100	—	247,800	
Copper (Cupric) Sources		*(DM%)*	*(CPE%)*	*Cu (mg/kg)*	*AC of Cu*
Cupric chloride dihydrate, $CuCl_2 \cdot 2H_2O$, cp	NA	100	—	372,000	0.05
Cupric oxide, CuO, cp	NA	100	—	798,800	0.01
Cupric sulfate pentahydrate, $CuSO_4 \cdot 5H_2O$, cp	6-01-720	100	—	254,500	0.05
Iodine Sources		*(DM%)*	*(CPE%)*	*I (mg/kg)*	*AC of I*
Ethylenediaminodihydroiodide (EDDI), fg	6-01-842	98	—	803,400	0.90
Potassium iodide, KI, fg	6-03-759	100	—	681,700	0.90
Iron Sources		*(DM%)*	*(CPE%)*	*Fe (mg/kg)*	*AC of Fe*
Ammonium phosphate (dibasic), $(NH_4)_2HPO_4$, fg	6-00-370	97	115.9	12,400	0.40
Ammonium phosphate (monobasic), $(NH_4)H_2PO_4$, fg	6-09-338	97	70.9	17,400	0.40
Bone meal, steamed, fg	6-00-400	97	13.2	26,700	0.40
Calcium phosphate (monobasic), $Ca(H_2PO_4)_2$, from defluorinated phosphoric acid, fg	6-01-082	97	—	15,800	0.40
Dicalcium phosphate (dibasic), $CaHPO_4$, from defluorinated phosphoric acid, fg	6-01-080	97	—	14,400	0.40
Ferrous sulfate heptahydrate, $FeSO_4 \cdot 7H_2O$, fg	6-20-734	98	—	218,400	0.60
Phosphate rock, fg	6-03-945	100	—	16,800	0.40
Phosphoric acid, -H_3PO_4, fg[g]	6-03-707	75	—	17,500	0.40
Soft rock phosphate, colloidal clay, fg	6-03-947	100	—	19,000	0.40
Manganese (Manganous) Sources		*(DM%)*	*(CPE%)*	*Mn (mg/kg)*	*AC of Mn*
Manganese carbonate, $MnCO_3$, cp	6-03-036	97	—	478,000	0.0015
Manganese chloride, $MnCl_2$, cp	NA	100	—	430,000	0.0120
Manganese chloride tetrahydrate, $MnCl_2 \cdot 4H_2O$, cp	NA	100	—	277,000	0.0120
Manganese oxide, MnO, cp	6-03-056	99	—	774,500	0.0025
Manganese sulfate monohydrate, $MnSO_4 \cdot H_2O$, cp	NA	100	—	325,069	0.0120
Manganese sulfate pentahydrate, $MnSO_4 \cdot 5H_2O$, cp	NA	100	—	227,891	0.0100
Selenium Sources		*(DM%)*	*(CPE%)*	*Se(mg/kg)*	
Sodium selenate decahydrate, $Na_2SeO_4 \cdot 10H_2O$, cp	NA	100	—	213,920	
Sodium selenite, Na_2SeO_3, cp	6-26-013	98	—	456,000	
Zinc Sources		*(DM%)*	*(CPE%)*	*Zn (mg/kg)*	*AC of Zn*
Zinc carbonate, $ZnCO_3$, cp	NA	100	—	521,400	0.10
Zinc chloride, $ZnCl_2$, cp	NA	100	—	479,700	0.20
Zinc oxide, ZnO, cp	6-05-533	100	—	780,000	0.12
Zinc sulfate monohydrate, $ZnSO_4 \cdot H_2O$, fg	6-05-555	99	—	363,600	0.20

(continues)

TABLE 15-4 *(continued)*

Mineral Element Source	International Feed No.[a]	Dry Matter[b]	Crude Protein Equivalent (CPE) = N% x 6.25	Primary Mineral Element Content	Absorption Coefficient (AC) of Primary Element
Fluorine Sources		*(DM%)*	*(CPE%)*	*Fl (mg/kg)*	
Ammonium phosphate (dibasic), $(NH_4)_2HPO_4$, fg	6-00-370	97	115.9	2,100	
Ammonium phosphate (monobasic), $(NH_4)H_2PO_4$, fg	6-09-338	97	70.9	2,500	
Calcium phosphate (monobasic), $Ca(H_2PO_4)_2$, from defluorinated phosphoric acid, fg	6-01-082	97	—	2,100	
Curacao, phosphate, fg	6-05-586	99	—	5,550	
Dicalcium phosphate (dibasic), $CaHPO_4$, from defluorinated phosphoric acid, fg	6-01-080	97	—	1,800	
Phosphate, defluorinated, fg	6-01-780	100	—	1,800	
Phosphate rock, fg	6-03-945	100	—	35,000	
Phosphoric acid, H_3PO_4, fg[g]	6-03-707	75	—	3,100	
Soft rock phosphate, colloidal clay, fg	6-03-947	100	—	15,000	

NOTE: The compositions of hydrated mineral sources (e.g., $CaSO_4 \cdot 2H_2O$) are shown including the waters of hydration. Mineral element compositions of feed-grade sources vary by source, processing method, site of mining, and manufacturer. Sources should be analyzed or manufacturer's analyses should be used when available. Element composition of a source is listed if specific element concentration is *≥1.0% for macromineral elements, or ≥10,000 mg/kg for micromineral elements, except for fluorine concentrations which are listed because of potential toxicity.*

[a] First digit denotes the class of feed: 1, dry forages and roughages; 2, pastured, range plants, and forages fed green; 3, silages; 4, energy feeds; 5, protein supplement; 6, minerals; 7, vitamins; 8, additives. The other five digits identify the individual feed.

[b] Dry matter contents have been estimated for the sources; actual analysis will be more accurate.

[c] fg = Feed-grade source.

[d] None present.

[e] cp = Chemically pure form.

[f] NA = Not available.

[g] Use caution when handling and mixing; can be extremely hazardous.