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G91-1048 Average Composition of Feeds Used in Nebraska

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G91-1048-A
(Revised March 1995)

Average Composition of Feeds Used in Nebraska

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Analyses of frequently used feedstuffs are shown on a dry matter basis in the following table.

Because the moisture content of feedstuffs varies widely, formulating rations on a dry basis contributes to accuracy in feeding cattle, compared to formulating on "as-fed" analyses.

Since it's inherent that many feedstuffs vary in moisture and nutrient composition, it is critical that feeds be sampled and analyzed for their nutrient composition. See NebGuides G77-331, *Sampling Feeds for Analyses*, and G89-915, *Testing Livestock Feed*, for additional information.

These composition data have been compiled from several sources, including feed composition tables in TAURUS Beef Helps, National Research Council Beef and Dairy Requirement publications, Morrison Feeds and Feeding, Atlas of Nutritional Data on U.S. and Canadian feeds, Ruminant Nitrogen Usage, and modification indicated by local feed analyses.

To convert nutrient values in the table from dry matter to an as-fed basis, multiply table values by dry matter content (decimal, example .90) of the feedstuff. To convert as-fed nutrient analysis to dry matter basis, divide nutrient value by dry matter content.

Remember: the amount of a nutrient is always greater on a dry matter basis, compared to an as-fed basis.

Feed Identification	Dry Matter %	Protein ^a			Energy ^a				Minerals ^a				
		Crude Protein %	Bypass Protein % of CP	Bypass Protein % of DM	NEM Mcal	NEG Mcal	NEL ^b Mcal	TDN %	Ca %	P %	K %	Mg %	S %
Grains													
Barley	89	12.0	20	2.4	93.0	64.0	88.0	83.0	0.05	0.37	0.47	0.15	0.18
Barley, thick	89	11.0	20	2.2	96.0	66.0	86.0	86.0	0.07	0.39	0.47	0.15	0.16
Barley, thin	89	13.0	20	2.6	84.0	55.0	79.0	77.0	0.07	0.37	0.47	0.15	0.18
Corn, dry rolled	86	10.0	60	6.0	102.0	70.0	84.0	90.0	0.02	0.31	0.31	0.13	0.14
Corn, ear	87	9.0	60	5.4	92.0	62.0	87.0	83.0	0.05	0.28	0.53	0.17	0.16
Corn, flaked	82	10.0	45	4.5	106.0	73.0	93.0	94.0	0.02	0.31	0.31	0.13	0.14
Corn, high moisture	75	10.0	40	4.0	102.0	70.0	93.0	90.0	0.02	0.31	0.31	0.13	0.14
Corn, high moisture ear	75	8.7	40	3.5	92.0	62.0	84.0	83.0	0.05	0.28	0.53	0.17	0.16
Corn, high moisture snapped	74	8.8	40	3.5	90.0	59.0	75.0	81.0	0.06	0.27	0.49	0.15	0.13
Millet	90	12.9	30	3.9	93.0	64.0	88.0	84.0	0.03	0.31	0.48	0.18	0.14
Oats	89	13.6	30	4.1	84.0	55.0	80.0	77.0	0.07	0.36	0.42	0.14	0.23
Oats, light	89	13.2	30	4.0	81.0	53.0	68.0	74.0	0.10	0.11	0.49	0.17	0.23
Oats, heavy	89	12.8	30	3.8	86.0	57.0	81.0	80.0	0.06	0.41	0.45	0.13	0.23
Potatoes	23	7.6	30	2.3	91.0	61.0	85.0	82.0	0.05	0.24	2.26	0.14	0.09
Rye	88	13.8	30	4.1	93.0	64.0	88.0	84.0	0.07	0.36	0.52	0.13	0.17
Sorghum, dry rolled	88	10.0	60	6.0	93.0	64.0	84.0	84.0	0.03	0.33	0.39	0.15	0.09
Sorghum, flaked	78	10.0	45	4.5	102.0	70.0	84.0	90.0	0.03	0.33	0.39	0.15	0.09
Sorghum, high moisture	75	10.0	40	4.0	102.0	70.0	84.0	90.0	0.03	0.33	0.39	0.15	0.09
Spelt	89	13.5	30	4.1	81.0	53.0	83.0	75.0	0.10	0.40	0.52	0.17	0.13
Triticale	89	16.5	20	3.3	93.0	64.0	88.0	84.0	0.05	0.33	0.42	0.09	0.17
Wheat, durum, dry rolled	89	15.7	30	4.7	95.0	65.0	88.0	85.0	0.11	0.41	0.51	0.17	0.17
Wheat, hard, dry rolled	89	12.5	20	2.5	99.0	68.0	93.0	88.0	0.06	0.41	0.49	0.13	0.17
Wheat, soft, dry rolled	88	12.3	20	2.5	100.0	69.0	94.0	89.0	0.05	0.43	0.44	0.11	0.13
Wheat, steam rolled	82	12.5	20	2.5	102.0	70.0	94.0	90.0	0.06	0.41	0.49	0.13	0.17
By-Product Energy Feeds													
Almond hulls	90	2.1	30	0.6	67.0	26.0	60.0	55.0	0.23	0.11	0.53	0.00	0.11
Animal fat	100	0	0	0	216.0	159.0	265.0	177.0	0	0	0	0	0

Feed Identification	Dry Matter %	Protein ^a			Energy ^a				Minerals ^a				
		Crude Protein %	Bypass Protein % of CP	Bypass Protein % of DM	NEM Mcal	NEG Mcal	NEL ^b Mcal	TDN %	Ca %	P %	K %	Mg %	S %
Beet pulp, dry	91	10.0	30	3.0	80.0	52.0	81.0	74.0	0.69	0.11	0.20	0.27	0.22
Beet pulp, wet	20	10.0	30	3.0	80.0	52.0	81.0	74.0	0.75	0.11	0.19	0.22	0.22
Beet pulp, with molasses	92	9.9	30	3.0	83.0	54.0	81.0	76.0	0.61	0.11	1.87	0.14	0.42
Corn screenings	88	9.0	60	5.4	92.0	62.0	90.0	83.0	0.04	0.41	0.30	0.20	0.10
Hominy	91	11.1	50	5.6	97.0	67.0	97.0	87.0	0.02	0.35	0.37	0.09	0.09
Lignosulfonate, ammoniated	50	8.0	0	0.0	32.0	22.0	32.0	32.0	0	0	0	0	0
Molasses, beet	77	8.7	0	0.0	87.0	58.0	78.0	79.0	0.17	0.03	6.20	0.30	0.60
Molasses, cane	75	5.8	0	0.0	77.0	49.0	75.0	72.0	1.00	1.00	3.84	0.47	0.46
Molasses, corn sugar	78	0.4	0	0.0	93.0	63.0	83.0	83.0	0.59	0.06	0.20	0	0
Rice bran	91	14.8	30	4.4	75.0	47.0	73.0	70.0	0.07	1.70	1.91	1.04	0.20
Sorghum screenings	88	9.0	60	5.4	81.0	53.0	80.0	78.0	0.03	0.31	0.35	0.20	0.12
Soybean hulls	91	12.0	30	3.6	81.0	54.0	80.0	78.0	0.45	0.17	1.27	0.30	0.09
Wheat bran	89	17.1	20	3.4	74.0	47.0	73.0	70.0	0.12	1.32	1.39	0.62	0.25
Wheat middlings	90	18.7	20	3.7	90.0	61.0	71.0	85.0	0.12	1.01	1.01	0.41	0.18
Wheat screenings	89	12.0	20	2.4	73.0	45.0	80.0	71.0	0.09	0.40	0.58	0.11	0.10
Wheat shorts	90	18.6	20	3.7	87.0	59.0	76.0	84.0	0.10	0.84	1.06	0.29	0.22
Whey, condensed	40	13.0	0	0	88.0	59.0	85.0	82.0	0.60	0.91	1.60	0.14	1.12
Whey, dried	90	17.9	0	0	87.0	57.0	87.0	79.0	1.71	1.12	3.16	0.23	1.12
Xanthan gum	100	0.0	0	0	0	0	0	0	0	0	0	0	0
Protein Sources													
Beans, cull	90	25.4	20	5.1	93.0	64.0	84.0	84.0	0.15	0.59	1.40	0.15	0.26
Blood meal, cooked	90	89.8	60	53.9	68.0	41.0	68.0	66.0	0.33	0.26	0.10	0.24	0.37
Blood meal, flash dried	90	89.8	75	67.4	67.0	40.0	65.0	65.0	0.33	0.26	0.10	0.24	0.37
Brewers dried grains	92	29.0	60	17.4	68.0	41.0	68.0	65.0	0.29	0.54	0.10	0.15	0.34
Brewers wet grains ^c	24	29.0	40	11.6	68.0	41.0	68.0	66.0	0.29	0.54	0.10	0.15	0.34
Buttermilk	93	34.2	0	0	100.0	69.0	90.0	89.0	1.44	1.01	0.90	0.52	0.09
Canola meal	90	43.6	25	10.9	73.0	45.0	77.0	69.0	0.67	1.00	1.40	0.60	0.28
Casein	90	91.0	0	0	140.0	100.0	94.0	89.0	0.67	0.90	0.01	0.01	0.00
Corn gluten feed, dry	88	21.5	22	4.7	94.0	60.0	87.0	77.0	0.10	0.83	1.50	0.51	0.40
Corn gluten feed, wet, Cargill ^c	60	20.0	20	4.0	98.0	67.0	87.0	86.0	0.15	0.95	1.10	0.43	0.80
Corn gluten feed, wet, MCP ^c	45	16.0	20	3.2	98.0	67.0	87.0	86.0	0.10	0.70	1.00	0.27	0.50
Corn gluten meal	91	65.9	60	39.5	100.0	69.0	88.0	89.0	0.08	0.51	0.21	0.09	0.72
Corn steep liquor ^c	54	47.0	0	0.0	102.0	70.0	89.0	90.0	0.06	1.10	4.50	1.50	0.58
Cottonseed, linted	92	23.0	35	8.1	110.0	77.0	101.0	96.0	0.21	0.64	1.00	0.46	0.26
Cottonseed meal, expeller	94	45.4	40	18.2	85.0	56.0	80.0	78.0	0.21	1.16	1.45	0.58	0.43
Cottonseed meal, solvent	91	45.8	30	13.7	83.0	54.0	78.0	76.0	0.17	1.21	1.52	0.59	0.28
Crambe meal	92	34.0	20	6.8	73.0	44.0	71.0	70.0	0.86	0.75	0.77	0.34	1.09
Distillers dried grains, corn ^c	92	29.5	60	17.7	122.0	84.0	90.0	108.0	0.10	0.40	0.18	0.07	0.46
Distillers wet grains, corn ^c	30	29.5	60	17.7	143.0	98.0	90.0	126.0	0.10	0.40	0.18	0.07	0.46
Distillers grains + solubles, corn ^c	93	29.5	50	14.8	122.0	84.0	93.0	108.0	0.10	0.71	0.44	0.18	0.33
Distillers solubles, corn ^c	44	31.5	20	6.3	143.0	98.0	93.0	126.0	0.10	0.71	0.44	0.18	0.40
Distillers dried grains, sorghum ^c	93	33.2	60	19.9	82.0	56.0	87.0	72.0	0.16	0.42	0.23	0.08	0.46
Distillers wet grains, sorghum ^c	30	33.2	60	19.9	98.0	67.0	87.0	86.0	0.16	0.42	0.23	0.08	0.46
Distillers grains + solubles, sorghum ^c	93	33.2	50	16.6	8	2.0	56.0	87.0	0.16	0.76	0.55	0.20	0.33
Distillers solubles, sorghum ^c	42	33.2	20	6.6	115.0	79.0	87.0	102.0	0.16	0.76	0.55	0.20	0.40
Feather meal ^c	91	91.3	60	54.8	74.0	47.0	73.0	70.0	0.28	0.75	0.30	0.22	1.61
Fish meal	90	66.6	60	40.0	74.0	45.0	76.0	71.0	5.90	3.30	0.70	0.16	0.49
Linseed meal, solvent	91	38.6	48	18.5	85.0	56.0	81.0	78.0	0.43	0.91	1.52	0.66	0.15
Meat Scraps ^c	94	57.1	50	28.6	75.0	48.0	74.0	71.0	8.49	4.31	0.59	0.29	0.53
Meat & Bone meal ^c	94	53.8	55	29.6	75.0	48.0	74.0	71.0	10.30	5.39	1.55	1.20	0.28
Peanut meal, solvent	91	52.3	28	14.6	84.0	55.0	80.0	77.0	0.29	0.68	1.23	0.17	0.33
Poultry waste, broiler	85	28.2	15	4.2	47.0	22.0	54.0	52.0	9.31	2.52	2.25	0.64	0.18
Poultry waste, layer	85	24.5	15	3.7	68.0	41.0	65.0	66.0	3.16	1.80	1.68	0.50	1.26
Safflower meal, expeller	92	22.8	20	4.6	60.0	34.0	61.0	60.0	0.28	0.78	0.79	0.36	0.06
Safflower meal, solvent	92	23.9	20	4.8	55.0	29.0	58.0	57.0	0.37	0.80	0.80	0.37	0.06
Soybean meal, expeller	90	46.7	40	18.7	95.0	65.0	91.0	85.0	0.29	0.68	1.98	0.28	0.37
Soybean meal, solvent	89	49.0	30	14.7	94.0	64.0	88.0	84.0	0.33	0.71	2.14	0.30	0.49
Soybeans, raw	90	41.7	20	8.3	103.0	71.0	96.0	91.0	0.28	0.66	1.77	0.31	0.24
Soybeans, roasted ^c	90	41.7	50	20.9	103.0	71.0	96.0	91.0	0.28	0.66	1.77	0.31	0.24
Sunflower seeds, CONF	92	28.1	20	5.6	68.0	45.0	60.0	58.0	0.13	0.44	0.50	0.53	0.02
Sunflower seeds, OIL	92	20.2	20	4.0	93.0	63.0	84.0	82.0	0.19	0.63	0.71	0.46	0.02
Sunflower meal, expeller	93	44.1	20	8.8	80.0	52.0	77.0	74.0	0.43	1.12	1.16	0.79	0.30
Sunflower meal + hulls, solvent	90	25.9	20	5.2	34.0	10.0	44.0	44.0	0.23	1.03	1.06	0.75	0.33
Sunflower meal - hulls, solvent	93	50.3	20	10.1	66.0	40.0	67.0	65.0	0.44	0.98	1.14	0.77	0.30
Urea	100	287.0	0	0	0	0	0	0	0	0	0	0	0
Dry Roughages													
Alfalfa dehy, 15% protein	93	16.3	30	4.9	58.0	32.0	60.0	59.0	1.32	0.24	2.50	0.31	0.18
Alfalfa dehy, 17% protein	93	19.7	46	9.1	61.0	35.0	63.0	61.0	1.43	0.26	2.68	0.31	0.24
Alfalfa dehy, 20% protein	92	21.8	56	12.2	62.0	36.0	64.0	62.0	1.79	0.31	2.70	0.31	0.35
Alfalfa hay, immature	90	21.5	10	2.2	63.0	36.0	70.0	63.0	1.72	0.30	2.70	0.78	0.29
Alfalfa hay, early bloom	90	18.4	15	2.8	60.0	34.0	61.0	60.0	1.40	0.23	2.52	0.33	0.29
Alfalfa hay, mid bloom	90	15.9	20	3.2	56.0	30.0	59.0	57.0	1.35	0.22	1.70	0.35	0.27

Feed Identification	Dry Matter %	Protein ^a			Energy ^a				Minerals ^a				
		Crude Protein %	Bypass Protein % of CP	Bypass Protein % of DM	NEM Mcal	NEG Mcal	NEL ^b Mcal	TDN %	Ca %	P %	K %	Mg %	S %
Alfalfa hay, mature	90	13.5	30	4.1	50.0	24.0	52.0	51.0	1.26	0.17	1.60	0.29	0.20
Alfalfa-Brome, early bloom	90	16.2	15	2.4	52.0	27.0	64.0	56.0	1.03	0.30	1.85	0.54	0.23
Alfalfa-Brome, mid bloom	90	14.0	20	2.8	50.0	24.0	54.0	53.0	1.14	0.15	1.40	0.78	0.23
Barley straw	90	4.1	20	0.8	43.0	11.0	49.0	48.0	0.30	0.07	1.88	0.13	0.17
Birdsfoot hay, mature	90	15.6	30	4.7	58.0	32.0	60.0	59.0	1.75	0.22	1.92	0.51	0.23
Blue Gramma hay, mature	90	6.3	30	1.9	56.0	22.0	56.0	47.0	0.21	0.08	0.60	0.14	0.10
Blustem hay, mature	90	2.9	30	0.9	56.0	15.0	54.0	47.0	0.29	0.07	0.51	0.06	0.10
Brome hay, immature	90	15.0	10	1.5	58.0	32.0	70.0	63.0	0.59	0.32	2.32	0.09	0.20
Brome hay, early bloom	90	10.5	15	1.6	52.0	26.0	64.0	55.0	0.43	0.25	2.10	0.09	0.20
Brome hay, mid bloom	90	8.0	20	1.6	50.0	25.0	64.0	53.0	0.29	0.28	2.00	0.09	0.20
Brome hay, mature	90	6.0	30	1.8	46.0	21.0	46.0	50.0	0.26	0.15	1.90	0.09	0.20
Buffalo hay	90	9.2	30	2.8	53.0	28.0	64.0	57.0	0.52	0.16	0.71	0.14	0.10
Corncobs	90	2.8	30	0.8	44.0	19.0	50.0	48.0	0.12	0.04	0.84	0.07	0.47
Corn shux	90	4.0	30	1.2	47.0	22.0	48.0	48.0	0.16	0.06	1.40	0.40	0.17
Corn stover	80	5.0	30	1.5	44.0	19.0	50.0	45.0	0.43	0.09	1.45	0.40	0.17
Cottonseed hulls	90	4.3	20	0.9	31.0	10.0	45.0	45.0	0.16	0.10	0.83	0.14	0.09
Crested wheatgrass hay, mid bloom	90	9.7	20	1.9	49.0	24.0	49.0	53.0	0.33	0.21	2.00	0.16	0.10
Crested wheatgrass hay, full bloom	90	8.7	25	2.2	46.0	21.0	46.0	50.0	0.28	0.16	1.00	0.28	0.10
Crested wheatgrass hay, mature	90	6.0	30	1.8	33.0	9.0	33.0	44.0	0.26	0.12	0.75	0.28	0.10
Fescue hay, early bloom	90	9.5	30	2.9	51.0	26.0	66.0	55.0	0.40	0.26	1.70	0.19	0.15
Fescue hay, mature	90	8.4	30	2.5	46.0	21.0	57.0	50.0	0.26	0.18	1.70	0.19	0.15
Millet hay	90	8.6	30	2.6	58.0	29.0	58.0	56.0	0.33	0.19	1.94	0.23	0.16
Oat hay, flower	90	9.2	30	2.8	58.0	31.0	62.0	59.0	0.26	0.24	1.51	0.26	0.25
Oat hulls	92	3.8	30	1.1	19.0	0.0	34.0	35.0	0.16	0.11	0.62	0.09	0.15
Oat straw	90	4.4	30	1.3	48.0	13.0	50.0	50.0	0.26	0.07	2.44	0.18	0.23
Orchardgrass hay, early bloom	90	13.0	15	2.0	54.0	29.0	67.0	56.0	0.43	0.22	2.00	0.11	0.24
Orchardgrass hay, mature	90	8.4	30	2.5	47.0	22.0	50.0	50.0	0.26	0.18	2.10	0.11	0.24
Pearlmillet hay	90	8.5	30	2.6	60.8	34.9	63.0	61.0	0.33	0.19	1.54	0.23	0.16
Prairie hay, early bloom	90	8.7	15	1.3	52.0	27.0	60.0	53.0	0.49	0.19	1.08	0.24	0.10
Prairie hay, full bloom	90	6.2	25	1.6	45.0	20.0	56.0	50.0	0.38	0.14	1.08	0.24	0.10
Prairie hay, mature	90	4.9	30	1.5	46.0	20.0	50.0	46.0	0.38	0.09	0.79	0.28	0.10
Red clover hay, early bloom	90	14.9	15	2.2	52.0	26.0	60.0	53.0	1.49	0.25	1.62	0.43	0.17
Reed canary grass hay, early bloom	90	8.5	20	1.7	52.0	27.0	50.0	55.0	0.33	0.16	2.35	0.26	0.41
Rice hulls	92	3.1	30	0.9	0	0	8.0	12.0	0.09	0.08	0.57	0.10	0.10
Small grains hay, early bloom	90	9.5	15	1.4	56.0	31.0	62.0	58.0	0.35	0.21	1.50	0.26	0.12
Small grains hay, dough	90	7.4	20	1.5	58.0	32.0	62.0	54.0	0.35	0.21	1.25	0.26	0.12
Small grains hay, high grain	90	8.5	20	1.7	63.0	37.0	67.0	63.0	0.33	0.22	0.97	0.26	0.17
Sorghum cane hay	85	7.0	20	1.4	55.0	27.0	59.0	55.0	0.38	0.14	1.45	0.34	0.15
Sorghum fodder	85	7.4	30	2.2	68.0	42.0	59.0	65.0	0.40	0.19	1.47	0.30	0.06
Sorghum stover	80	5.3	30	1.6	50.0	23.0	55.0	47.0	0.48	0.11	1.20	0.30	0.04
Soybean hay	90	16.8	20	3.4	49.0	24.0	61.0	53.0	1.29	0.33	0.97	0.79	0.26
Soybean straw	90	5.5	20	1.1	31.0	6.0	44.0	40.0	1.59	0.06	0.53	0.92	0.10
Sudan grass hay, early bloom	89	11.0	15	1.7	54.0	29.0	68.0	56.0	0.56	0.19	1.54	0.49	0.06
Sudan grass hay, mature	90	6.6	30	2.0	50.0	24.0	52.0	48.0	0.26	0.14	1.54	0.49	0.06
Sunflower hulls	93	4.0	30	1.2	30.0	6.0	70.0	28.0	0.20	0.11	0.45	0.25	0.02
Sweet clover hay, early bloom	90	17.8	15	2.7	60.0	34.0	60.0	60.0	1.45	0.24	1.90	0.25	0.49
Sweet clover hay, midbloom	86	16.0	20	3.2	56.0	28.0	58.0	55.0	1.40	0.21	1.84	0.33	0.49
Sweet clover hay, full bloom	86	13.0	25	3.3	50.0	25.0	56.0	52.0	1.35	0.18	1.10	0.25	0.49
Sweet clover hay, mature	88	11.0	30	3.3	42.0	17.0	51.0	47.0	1.30	0.18	0.80	0.62	0.49
Western wheat grass hay, early bloom	90	7.3	20	1.5	54.0	28.0	60.0	54.0	0.30	0.15	2.60	0.24	0.10
Wheat straw	90	4.2	30	1.3	44.0	7.0	44.0	45.0	0.18	0.05	1.42	0.12	0.19
Silages													
Alfalfa haylage, immature	50	21.5	10	2.2	63.0	36.0	70.0	63.0	1.72	0.30	2.70	0.78	0.29
Alfalfa haylage, early bloom	50	18.4	15	2.8	60.0	34.0	64.0	60.0	1.40	0.23	2.52	0.33	0.29
Alfalfa silage, immature	35	21.5	10	2.2	63.0	36.0	70.0	63.0	1.72	0.30	2.70	0.78	0.29
Alfalfa silage, early bloom	35	18.4	15	2.8	60.0	34.0	64.0	60.0	1.40	0.22	2.52	0.33	0.29
Alfalfa silage, mid bloom	35	15.9	20	3.2	56.0	30.0	57.0	57.0	1.35	0.20	1.70	0.35	0.27
Alfalfa silage, mature	35	13.5	30	4.1	50.0	24.0	52.0	51.0	1.26	0.17	1.60	0.29	0.20
Alfalfa & Brome silage	35	16.2	20	3.2	52.0	27.0	55.0	56.0	1.03	0.30	1.85	0.54	0.23
Beet tailings silage	20	10.0	20	2.0	66.0	40.0	68.0	65.0	2.50	0.20	2.00	0.60	0.50
Beet top silage	32	11.9	20	2.4	45.0	20.0	54.0	51.0	1.56	0.22	2.63	0.81	0.57
Corn silage	35	8.0	25	2.0	74.0	47.0	72.0	70.0	0.27	0.20	1.05	0.28	0.08
Corn silage, drought damaged	35	11.1	25	2.8	67.0	40.0	67.0	61.0	0.34	0.20	1.05	0.28	0.08
Grass-Legume silage	35	11.8	20	2.4	56.0	30.0	50.0	52.0	0.78	0.28	1.30	0.20	0.23
Potato silage	25	7.6	20	1.5	91.0	61.0	86.0	82.0	0.04	0.23	0.71	0.04	0.09
Small grains silage, flower	35	9.5	15	1.4	58.0	31.0	57.0	59.0	0.35	0.21	1.50	0.26	0.12
Small grains silage, dough	35	7.5	20	1.5	58.0	32.0	57.0	59.0	0.35	0.21	1.25	0.26	0.12
Small grains silage, high grain	40	8.0	20	1.6	63.0	37.0	60.0	65.0	0.33	0.22	0.97	0.26	0.17
Sunflower silage	30	11.3	20	2.3	56.0	22.0	63.0	55.0	1.72	0.20	2.92	0.09	0.01
Sorghum silage	30	8.1	20	1.6	62.0	38.0	56.0	58.0	0.35	0.20	1.22	0.27	0.10
Sudan silage, immature	25	16.8	10	1.7	58.0	32.0	72.0	59.0	0.43	0.19	3.07	0.49	0.06
Sudan silage, early bloom	28	11.3	15	1.7	55.0	28.0	64.0	55.0	0.46	0.19	2.25	0.49	0.06
Sudan silage, mature	30	6.0	20	1.2	52.0	24.0	56.0	48.0	0.26	0.14	1.54	0.49	0.06

Feed Identification	Dry Matter %	Protein ^a			Energy ^a				Minerals ^a				
		Crude Protein %	Bypass Protein % of CP	Bypass Protein % of DM	NEM Mcal	NEG Mcal	NEL ^b Mcal	TDN %	Ca %	P %	K %	Mg %	S %
Sudan-X silage	25	8.7	20	1.7	56.0	28.0	56.0	49.0	0.60	0.23	1.54	0.49	0.06
Sweet clover silage, early bloom	27	17.8	15	2.7	60.0	34.0	60.0	60.0	1.45	0.24	1.90	0.25	0.49
Sweet clover silage, mid bloom	30	16.0	20	3.2	56.0	28.0	58.0	55.0	1.40	0.21	1.84	0.33	0.49
Turnip roots	8	11.8	20	2.4	95.0	65.0	89.0	85.0	1.30	0.32	3.20	0.29	0.43
Turnip tops	10	16.0	20	3.2	57.0	31.0	70.0	58.0	2.90	0.58	3.80	0.47	0.43
Grazed Forages — Crops^{de}													
Pearlmillet, leaves	20	13.7	23	3.2	60.8	34.9	63.0	61.0	0.33	0.19	1.54	0.23	0.16
Pearlmillet, stems	20	9.9	19	1.9	60.8	34.9	63.0	61.0	0.33	0.19	1.54	0.23	0.16
Sudan grass, leaves	20	17.0	28	4.7	58.0	32.0	72.0	59.0	0.43	0.19	3.07	0.49	0.06
Sudan grass, stems	20	7.2	26	1.9	58.0	32.0	72.0	59.0	0.43	0.19	3.07	0.49	0.06
Wheat pasture, early vegetative	20	28.6	10	2.9	78.5	50.3	76.0	73.0	0.42	0.40	3.50	0.21	0.22
Grazed Forages — Eastern Nebraska^{de}													
Smooth Brome, May	20	21.7	5	1.0	58.0	32.0	70.0	63.0	0.59	0.32	2.32	0.09	0.20
Smooth Brome, June	20	18.8	5	1.0	50.0	25.0	64.0	53.0	0.29	0.28	2.00	0.09	0.20
Smooth Brome, July	20	17.0	6	1.0	46.0	21.0	46.0	50.0	0.26	0.15	1.90	0.09	0.20
Mixed warm-season grasses, June	20	11.3	27	3.0	52.0	27.0	60.0	53.0	0.49	0.19	1.08	0.24	0.10
Mixed warm-season grasses, July	20	10.6	28	3.0	45.0	20.0	56.0	50.0	0.38	0.14	1.08	0.24	0.10
Mixed warm-season grasses, August	20	10.9	28	3.0	46.0	20.0	50.0	46.0	0.38	0.09	0.79	0.28	0.10
Grazed Forages — Sandhills Range^{de}													
Mixed cool-season grasses, June	20	8.5	12	1.0	58.0	32.0	70.0	63.0	0.59	0.32	2.32	0.09	0.20
Mixed cool-season grasses, July	20	6.0	17	1.0	50.0	25.0	64.0	53.0	0.29	0.28	2.00	0.09	0.20
Mixed cool-season grasses, August	20	7.0	14	1.0	46.0	21.0	46.0	50.0	0.26	0.15	1.90	0.09	0.20
Mixed cool-season grasses, September	20	6.5	15	1.0	50.0	25.0	64.0	53.0	0.29	0.28	2.00	0.09	0.20
Mixed warm-season grasses, June	20	9.5	32	3.0	52.0	27.0	60.0	53.0	0.49	0.19	1.08	0.24	0.10
Mixed warm-season grasses, July	20	7.0	43	3.0	45.0	20.0	56.0	50.0	0.38	0.14	1.08	0.24	0.10
Mixed warm-season grasses, August	20	7.5	40	3.0	46.0	20.0	50.0	46.0	0.38	0.09	0.79	0.28	0.10
Mixed warm-season grasses, September	20	5.0	60	3.0	46.0	20.0	50.0	46.0	0.38	0.09	0.79	0.28	0.10
Grazed Forages — Nonirrigated Meadow^{de}													
Mixed cool-season grasses, June	20	7.5	13	1.0	58.0	32.0	70.0	63.0	0.59	0.32	2.32	0.09	0.20
Mixed cool-season grasses, July	20	5.5	18	1.0	50.0	25.0	64.0	53.0	0.29	0.28	2.00	0.09	0.20
Mixed cool-season grasses, August	20	5.9	17	1.0	46.0	21.0	46.0	50.0	0.26	0.15	1.90	0.09	0.20
Mixed cool-season grasses, September	20	6.2	16	1.0	50.0	25.0	64.0	53.0	0.29	0.28	2.00	0.09	0.20
Minerals													
Ammonium sulfate	100	134.0	0	0	0	0	0	0	0	0	0	0	24.0
Bone meal	100	0	0	0	0	0	0	0	30.5	14.3	0	0	0
Calcium sulfate	100	0	0	0	0	0	0	0	25.9	0	0	2.6	23.5
Limestone	100	0	0	0	0	0	0	0	38.0	0	0	0	0
Magnesium oxide	100	0	0	0	0	0	0	0	3.1	0	0	56.2	0
Phosphoric acid	75	0	0	0	0	0	0	0	0	31.7	0	0	0
Phosphorus, ammonium poly	60	104.0	0	0	0	0	0	0	0	24.3	0	0	0
Phosphorus, curacao island	100	0	0	0	0	0	0	0	34.0	14.0	0	0	0
Phosphorus, defluorinated rock	100	0	0	0	0	0	0	0	31.0	18.0	0	0	0
Phosphorus, diammonium	85	115.9	0	0	0	0	0	0	0	20.6	0	0	0
Phosphorus, dicalcium	100	0	0	0	0	0	0	0	22.0	19.3	0	0	0
Phosphorus, disodium	100	0	0	0	0	0	0	0	0	21.6	0	0	0
Phosphorus, monoammonium	100	11.0	0	0	0	0	0	0	0	25.0	0	0	0
Phosphorus, monocalcium	100	0	0	0	0	0	0	0	16.4	21.6	0	0	0
Phosphorus, monosodium	100	0	0	0	0	0	0	0	0	22.5	0	0	0
Phosphorus, sodium tripoly	100	0	0	0	0	0	0	0	0	25.0	0	0	0
Potassium chloride	100	0	0	0	0	0	0	0	0	0	50.5	0	0
Potassium sulfate	100	0	0	0	0	0	0	0	0	0	44.0	0	18.0
Sodium chloride (salt)	100	0	0	0	0	0	0	0	0	0	0	0	0

^aCP = Crude Protein, DM = Dry Matter, NEM = Net Energy for Maintenance, NEG = Net Energy for Gain, NEL = Net Energy for Lactation, TDN = Total Digestible Nutrients, Ca = Calcium, P = Phosphorus, K = Potassium, Mg = Magnesium, S = Sulfur.

^bDairy rations should be formulated with NEL values only. These NEL values agree with Dairy NRC (1989). Listed TDN values are based on values for beef cattle and are different from the values listed in the Dairy NRC (1989).

^cDry matter and nutrient composition will vary greatly with different processing plants.

^dCrude protein and bypass protein estimates are based on a limited number of forage samples. Esophageal analyses were used whenever possible; however several protein values are based on clipped forage samples.

^eEnergy and mineral analyses of grazed forages are based on nutrient analyses of hay and silage or of a single specie of grass hay, and thus are rough estimates of actual grazed forage content.

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