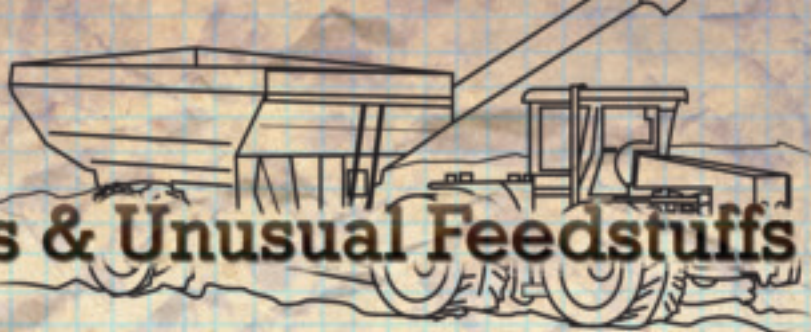


B

Byproducts & Unusual Feedstuffs



By **JOHN C. WALLER**

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Feeding programs often include byproducts and unusual feedstuffs to provide key nutrients to animals. The data presented in the Table should be considered as a guide to nutrient content rather than a precise statement of nutrient composition. Because many of the feedstuffs are byproducts, they are, by the nature of their origin, often subject to variation in composition. Other factors that contribute to the wide variation in nutrient composition of these feedstuffs are growing conditions, harvest conditions, post harvest processing, storage and handling.

The following abbreviations are used in the Table: ADF is acid detergent fiber; Ca is calcium; CF is crude fiber; CP is crude protein; DE is digestible energy; DM is dry matter; EE is ether extract (crude fat); K is potassium; Mcal is megacalorie; Mech-extd is mechanically extracted; Mg is magnesium; NEg is net energy for gain; NEI is net energy for lactation; NEm is net energy for maintenance; NFE is nitrogen-free ex-

tract; P is phosphorus; Solv-extd is solvent extracted, and TDN is total digestible nutrients. A dash indicates there is no information available.

Energy values marked with an asterisk in the table were calculated from chemical analysis data when actual energy values were not available from digestion trials. The values were then reduced 10% to provide a safety factor when using them for ration formulation. The following formulas were used (all constituents on a DM basis):

$$(1) \%TDN = 1.15 CP\% + 1.75 EE\% + 0.45 CF\% + 0.0085 NFE\% \times 2 + 0.25 NFE\% - 3.4.$$

$$(2) NEI \text{ (Mcal/lb.)} = (0.0245 TDN\% - 0.12) \times 0.4536.$$

$$(3) DE \text{ (Mcal/lb.)} = 0.0229 CP\% + 0.0349 EE\% + 0.0091 CF\% + 0.00017 NFE\% \times 2 + 0.005 NFE\% - 0.068.$$

$$(4) NEm \text{ (Mcal/lb.)} = 0.655 DE \text{ (Mcal/lb.)} - 0.185$$

$$(5) NEg \text{ (Mcal/lb.)} = 0.815 DE \text{ (Mcal/lb.)} - 0.0497 DE \text{ (Mcal/lb.)} - 0.625.$$

Several items listed in this Table have been included in the Nutrient Requirements of Dairy Cattle, seventh revised edition (2001) and in the Nutrient Requirements of Beef Cattle, update (2000). Both of these references include estimates for soluble nitrogen, rumen degradable protein, rumen undegradable protein, amino acids, minerals and vitamins.

Byproducts and unusual feedstuffs

Feedstuff	As fed (% DM)	DM basis												
		TDN (%)	NEI (Mcal/lb.)	NEm (Mcal/lb.)	NEg (Mcal/lb.)	CP (%)	EE (%)	CF (%)	ADF (%)	Ash (%)	Ca (%)	P (%)	K (%)	Mg (%)
Acorns	70.0	47.0	0.47	0.43	0.10	4.8	5.4	13.9	17	1.7	—	—	—	—
Acorns, white oak	50.0	46.8	0.47	0.43	0.09	3.7	5.3	2.2	3	1.9	—	—	—	—
Alder leaves, sun-cured	85.0	47.8	0.48	0.49	0.11	22.0	6.0	17.0	21	5.9	—	—	—	—
Alfalfa seed screenings	90.0	86.0	0.90	0.94	0.63	34.4	10.9	12.3	15	5.6	—	—	—	—
Alfalfa	20.0	55.4	0.56	0.54	0.22	14.2	4.6	23.6	30	8.6	1.76	0.46	—	—
Almond hulls, 13% CF	90.0	55.0	0.56	0.53	0.24	2.1	3.0	15.0	28	6.6	0.23	0.11	—	—
Almond hulls, 15% CF	90.0	52.0	0.52	0.49	0.19	2.0	3.0	17.0	32	6.6	0.23	0.11	—	—
Almond hulls and shells, 20% CF	90.0	45.0	0.44	0.40	0.08	1.7	2.2	22.0	41	9.9	0.22	0.11	—	—
Apple pomace, dried	89.0	69.0	0.71	0.73	0.45	4.9	5.1	17.0	26	2.2	0.13	0.12	0.48	0.07
Apple pulp silage	21.4	74.0	0.77	0.78	0.47	7.8	6.3	20.6	26	4.9	0.10	0.10	—	—
Apples	17.0	70.0	0.72	0.72	0.44	2.8	2.2	7.3	9	2.2	0.06	0.60	0.78	0.29
Apricots, dried	90.0	77.1	0.80	0.83	0.51	—	—	0.0	0	—	—	—	—	—
Artichoke silage	30.0	48.0	0.48	0.43	0.11	7.2	1.7	27.3	34	18.5	—	—	—	—
Artichoke tubers	20.0	77.0	0.80	0.81	0.51	9.8	0.5	3.9	5	4.9	—	0.29	2.00	—
Artichoke, aerial part	27.0	60.0	0.61	0.59	0.28	5.1	1.1	18.0	23	7.7	1.62	0.11	1.36	—
Asparagus butts, dried	91.0	49.0	0.49	0.45	0.13	15.6	1.0	31.9	40	7.7	—	—	—	—
Aspen leaves, sun-cured	85.0	48.9	0.49	0.46	0.12	17.2	5.4	24.5	31	9.1	—	—	—	—
Avocado oil meal	91.0	50.0	0.50	0.46	0.13	20.3	1.2	19.3	24	12.4	—	—	—	—
Avocado seeds	41.0	90.0	0.95	0.99	0.68	4.9	3.8	5.9	7	—	0.04	0.20	1.26	—
Avocado skins	24.0	90.0	0.95	1.00	0.69	6.9	34.9	24.5	31	—	0.11	0.18	1.82	—
Babassu meal, mech-extd	91.0	75.7	0.79	0.81	0.49	21.8	6.5	16.1	20	5.1	0.20	1.00	—	0.97
Babassu meal, solv-extd	82.7	66.4	0.68	0.68	0.37	21.3	2.5	19.0	24	6.8	0.13	0.71	—	0.97
Bahiagrass hay, mature, sun-cured	90.8	55.9	0.57	0.55	0.22	4.7	1.6	33.6	42	5.9	0.45	0.19	1.45	0.25
Bakery waste, dried	92.0	89.0	0.94	1.00	0.69	10.7	12.7	1.3	13	4.4	0.14	0.26	0.53	0.26
Banana skins, dried, ground	88.0	59.3	0.60	0.59	0.27	7.7	8.1	8.6	11	10.5	—	—	—	—
Bananas	24.3	84.1	0.88	0.92	0.61	4.5	0.8	2.1	3	3.3	0.03	0.11	—	—
Bananas, dried	86.0	74.0	0.77	0.77	0.49	4.1	0.6	1.2	2	3.0	0.03	0.11	1.52	—
Barley bran	91.0	59.0	0.60	0.57	0.29	12.5	4.3	21.3	27	7.0	—	—	—	—
Barley distillers dried grains	92.0	69.0	0.71	0.70	0.43	30.1	12.6	11.0	14	2.0	—	—	—	—
Barley malt sprouts	94.0	71.0	0.74	0.76	0.48	28.0	1.4	16.0	18	7.0	0.23	0.75	0.23	0.20
Barley middlings	89.0	68.0	0.70	0.69	0.42	16.3	5.0	10.4	13	4.8	—	—	—	—
Barley mill run	90.0	70.0	0.72	0.71	0.44	11.7	2.8	15.7	20	4.6	—	—	—	—
Barley screenings	89.0	66.0	0.68	0.67	0.39	11.6	2.7	9.1	11	3.5	0.46	0.32	1.38	0.14

BYPRODUCTS & UNUSUAL FEEDSTUFFS

Feedstuff	As	DM basis													
	fed (% DM)	TDN (%)	NE _i	NE _m	NE _g	CP (%)	EE (%)	CF (%)	ADF (%)	Ash (%)	Ca (%)	P (%)	K (%)	Mg (%)	
			------(Mcal/lb.)-----												
Barley straw	91.0	49.0	0.49	0.42	0.24	4.3	1.9	42.0	59	7.1	0.30	0.07	2.39	0.23	
Barley, pearl, byproduct	89.6	75.5	0.78	0.80	0.49	14.7	3.9	11.9	15	5.7	0.05	0.46	—	—	
Barley, sprouted 5 days	13.2	70.0	0.72	0.73	0.42	18.1	5.2	19.7	25	4.1	—	—	—	—	
Bean hulls, velvet	86.8	58.3	0.59	0.58	0.26	13.4	2.2	28.2	35	7.0	—	—	—	—	
Bean pods w/seeds, carob	87.7	79.0	0.82	0.85	0.54	6.3	3.0	9.9	12	2.8	—	—	—	—	
Bean pods w/seeds, mesquite, dried	91.5	63.1*	0.65*	0.64*	0.32*	11.5	1.7	20.1	25	4.6	—	—	—	—	
Bean pods w/seeds, velvet	88.7	59.1	0.60	0.59	0.27	19.4	4.8	14.5	18	5.3	0.27	0.42	1.35	0.24	
Bean pods, broad, dried, ground	92.5	63.4	0.65	0.65	0.33	16.6	1.1	17.8	22	7.3	—	—	—	—	
Bean pods, broad, sun-cured	91.8	52.0	0.52	0.50	0.17	7.7	1.1	37.9	47	4.2	0.85	0.11	—	—	
Bean pods, carob	83.9	73.6	0.76	0.78	0.47	5.7	1.7	9.5	12	4.2	—	—	—	—	
Bean pods, lima	28.2	55.7*	0.56*	0.54*	0.22*	7.2	1.9	38.6	48	—	—	—	—	—	
Bean pods, velvet	88.6	60.4	0.62	0.61	0.29	5.2	0.9	31.6	40	7.9	—	—	—	—	
Bean straw	90.0	51.0	0.51	0.49	0.12	6.8	1.5	44.5	56	8.2	1.85	0.14	1.14	0.13	
Bean straw meal	92.1	44.1*	0.44*	0.39*	0.05*	7.7	1.5	39.6	50	11.8	—	—	—	—	
Bean straw meal, lima	88.8	51.3*	0.52*	0.49*	0.16*	11.3	2.4	31.4	39	9.3	—	—	—	—	
Bean straw, broad	89.1	48.7	0.49	0.45	0.12	6.8	1.6	45.0	56	8.3	1.87	0.15	—	—	
Bean straw, green	89.0	51.0	0.51	0.47	0.15	20.5	1.7	24.0	30	14.5	1.44	0.27	—	—	
Bean straw, kidney	86.0	55.0	0.56	0.53	0.22	9.9	1.6	34.7	43	10.4	—	—	—	—	
Bean straw, lima	90.0	58.0	0.59	0.57	0.25	7.6	1.8	31.0	39	8.2	0.10	0.41	1.88	0.20	
Beans, algaroba	85.4	62.4*	0.64*	0.63*	0.31*	10.8	2.4	22.4	28	4.1	—	—	—	—	
Beans, blackeye	91.5	74.0*	0.77*	0.78*	0.47*	23.4	1.4	3.0	4	5.2	—	—	—	—	
Beans, broad or horse	86.0	84.1	0.88	0.92	0.61	29.2	1.9	7.7	10	2.4	—	—	—	—	
Beans, butter	85.8	73.2*	0.76*	0.77*	0.46*	21.1	2.1	5.7	7	4.6	—	—	—	—	
Beans, cannery residue	9.4	72.5*	0.75*	0.76*	0.45*	23.5	3.0	13.5	17	—	—	—	—	—	
Beans, carob	81.2	79.0	0.82	0.85	0.54	6.2	0.4	7.5	9	2.5	—	—	—	—	
Beans, carob, ground	87.5	77.5	0.81	0.83	0.52	13.0	2.1	9.3	12	3.3	0.39	0.09	—	—	
Beans, common, cracked	89.0	68.6*	0.71*	0.71*	0.40*	27.6	1.4	3.3	4	9.0	—	—	—	—	
Beans, field or navy	90.0	87.0	0.91	0.97	0.64	25.4	1.5	4.7	6	4.6	0.17	0.63	1.41	0.18	
Beans, green	89.0	63.0	0.65	0.63	0.35	16.9	3.8	25.3	32	9.0	—	—	—	—	
Beans, horse	87.3	78.8	0.82	0.85	0.54	29.2	1.5	8.8	11	4.0	0.15	0.62	—	—	
Beans, horse, ground	88.4	73.4*	0.76*	0.78*	0.46*	29.2	1.6	4.4	6	4.0	—	—	—	—	
Beans, horse, hulled	88.3	77.0*	0.80*	0.82*	0.51*	33.1	2.2	0.9	1	3.0	—	—	—	—	
Beans, kidney	89.0	83.0	0.87	0.90	0.60	24.7	1.5	4.7	6	4.2	0.12	0.45	1.10	—	
Beans, lima	90.0	83.0	0.87	0.90	0.60	23.1	1.5	5.1	6	—	0.09	0.42	1.80	—	
Beans, locust	90.8	73.6	0.76	0.78	0.47	7.3	0.6	9.8	12	3.1	—	—	—	—	
Beans, mung	90.0	84.0	0.88	0.91	0.61	26.6	1.4	4.3	5	4.2	0.14	0.68	1.15	—	
Beans, navy	89.0	84.0	0.88	0.94	0.64	25.3	1.5	5.0	6	5.2	0.18	0.59	1.47	0.15	
Beans, pinto	90.0	83.0	0.87	0.90	0.60	25.2	1.4	4.5	6	4.8	0.16	0.39	—	—	
Beans, tepary	90.5	74.4	0.77	0.79	0.48	24.5	1.5	3.8	5	4.6	—	—	—	—	
Beans, velvet	89.3	87.1	0.91	0.96	0.64	23.8	5.4	10.8	14	3.7	0.27	0.36	—	—	
Beet crowns w/tops, sugar, silage	22.0	51.0	0.51	0.46	0.21	13.4	2.8	13.7	16	32.5	2.32	0.20	5.79	1.07	
Beet crowns, sugar	18.0	58.3	0.59	0.58	0.26	16.8	1.8	10.4	22	19.9	—	—	—	—	
Beet pulp, dried	91.0	78.0	0.81	0.86	0.57	9.7	0.6	19.8	33	4.4	0.69	0.10	0.20	0.27	
Beet pulp, molasses dried	92.0	78.0	0.81	0.86	0.57	10.1	0.6	16.5	25	6.1	0.61	0.10	1.78	0.16	
Beet pulp, silage	11.1	75.0	0.78	0.80	0.52	13.5	1.9	31.9	40	4.0	—	—	—	—	
Beet tailings silage, sugar	18.9	50.4*	0.51*	0.47*	0.15*	9.5	5.3	23.8	30	16.4	—	—	—	—	
Beet tops, mangels	12.6	60.7	0.62	0.61	0.29	17.0	4.2	11.4	14	19.2	—	—	—	—	
Beet tops, red	9.0	53.0	0.53	0.50	0.19	24.2	3.3	14.3	18	—	1.31	0.44	6.26	—	
Beet tops, sugar	17.0	58.0	0.59	0.56	0.27	15.1	1.1	11.2	14	22.9	1.01	0.22	5.79	1.12	
Beets, common	13.0	80.3	0.84	0.87	0.56	12.3	0.8	6.9	9	11.5	0.23	0.31	2.15	0.15	
Beets, mangels	13.8	79.2	0.83	0.85	0.54	11.3	0.6	7.5	9	9.7	0.22	0.22	1.98	0.19	
Beets, red	12.7	76.8	0.80	0.82	0.51	12.6	0.8	6.3	8	8.7	0.13	0.26	—	—	
Bread, dried	92.0	89.0	0.94	0.99	0.65	13.3	3.1	1.0	1	2.0	0.09	0.16	0.16	—	
Bread, waste	68.3	89.3	0.95	1.00	0.69	15	2.2	—	3	2.8	0.14	0.20	0.23	0.05	
Brewers dried grains, Calif.	92.0	60.0	0.61	0.58	0.32	22.2	6.3	20.0	29	4.1	0.29	0.54	0.11	0.15	
Brewer dried grain 25% CP	92.0	66.0	0.68	0.69	0.41	25.4	6.5	14.9	24	4.8	0.33	0.55	0.09	0.16	
Brewers grains, wet	21.0	66.0	0.68	0.69	0.41	25.4	6.5	14.9	23	4.8	0.33	0.55	0.09	0.16	
Broccoli	11.0	70.0	0.72	0.73	0.41	33.0	2.8	13.8	17	10.1	0.92	0.73	3.49	—	
Brussels sprouts	15.0	73.0	0.76	0.77	0.46	33.1	2.7	10.8	14	8.1	0.27	0.54	2.64	—	
Buckwheat	86.6	70.7	0.73	0.74	0.53	12.5	2.8	13.5	17	2.3	—	—	—	—	
Buckwheat middlings	88.7	83.7	0.88	0.91	0.60	33.5	8.2	8.3	10	5.5	—	1.15	—	—	
Cabbage	9.5	85.3	0.89	0.93	0.63	25.3	4.2	15.8	20	14.7	0.64	0.35	2.53	0.21	
Cabbage leaves	14.8	66.7	0.69	0.69	0.37	14.4	2.6	14.3	18	15.6	0.63	0.21	—	—	
Cabbage powder, dried	88.3	67.8*	0.70*	0.70*	0.39*	16.9	4.5	9.5	12	7.9	—	—	—	—	
Cactus, prickly pear	20.6	58.8	0.60	0.59	0.26	4.8	2.3	13.4	17	18.9	9.16	0.12	1.21	1.65	
Cactus, spineless	5.3	49.2*	0.49*	0.46*	0.13*	13.5	1.7	11.0	14	23.0	—	—	—	—	
Canarygrass hay	91.0	0.53	0.53	0.53	0.18	9.0	2.7	32.0	34	8.0	0.38	0.25	2.7	—	
Canola seed	89.9	127.4	1.60	1.49	1.08	20.5	40.5	—	12	4.6	0.44	0.68	0.91	0.21	
Cantaloupe	10.0	66.0	0.68	0.68	0.37	20.4	8.3	20.6	26	—	—	—	—	—	
Caraway seeds, unspec-extn, ground	86.2	89.5	0.94	0.99	0.83	24.9	16.1	15.9	20	7.8	—	—	—	—	
Carrot pulp	14.0	62.8*	0.64*	0.64*	0.32*	6.4	7.8	18.6	23	8.6	—	—	—	—	
Carrot tops	16.0	74.0	0.77	0.77	0.49	13.1	3.8	18.1	23	15.0	1.94	0.19	1.88	—	
Carrots	12.0	84.0	0.88	0.64	0.64	9.9	1.4	9.1	11	8.2	0.40	0.35	2.80	0.20	

BYPRODUCTS & UNUSUAL FEEDSTUFFS

Feedstuff	As	DM basis												
	fed (% DM)	TDN (%)	NE _i (Mcal/lb.)	NE _m	NE _g	CP (%)	EE (%)	CF (%)	ADF (%)	Ash (%)	Ca (%)	P (%)	K (%)	Mg (%)
Cassava roots, dried, ground	90.9	79.4	0.83	0.86	0.54	2.9	0.7	4.9	6	2.3	—	0.03	—	—
Cauliflower	9.0	70.0	0.72	0.73	0.42	30.0	2.2	11.1	14	—	0.22	0.67	3.33	—
Celery	6.0	62.0	0.63	0.61	0.33	15.3	1.7	10.2	13	16.9	0.66	0.47	5.78	—
Celery powder, dried	91.9	51.9*	0.52*	0.50*	0.17*	23.1	6.3	10.2	13	25.7	—	—	—	—
Cereal byproduct	88.5	87.6	0.90	0.96	0.66	9.1	3.5	—	4	3.2	0.17	0.29	0.33	0.10
Cheese, cottage	21.0	81.2	0.85	0.88	0.57	81.0	1.4	0.0	0	4.8	0.43	0.86	—	—
Cherry leaves, black, sun-cured	76.1	59.9	0.61	0.60	0.28	15.5	3.5	22.6	28	4.1	—	—	—	—
Chestnut meats	47.5	87.5	0.92	0.96	0.65	6.1	3.2	2.3	3	2.1	0.06	0.19	—	—
Chickpeas (garbanzo beans), dried	89.0	89.0	0.93	0.99	0.65	21.9	4.4	7.9	10	3.3	0.17	0.37	0.89	—
Chocolate byproduct	95.2	102.7	1.16	1.16	0.82	11.9	20.5	—	16	2.1	0.22	0.30	1.18	0.22
Citrus pulp	18.0	78.0	0.81	0.86	0.57	7.3	9.7	15.6	20	7.7	—	—	—	—
Citrus pulp, dried	91.0	77.0	0.80	0.85	0.55	6.7	3.7	12.7	22	6.6	1.84	0.12	0.79	0.17
Citrus pulp, silage	21.0	78.0	0.81	0.86	0.57	7.3	9.7	15.6	25	5.5	2.04	0.15	0.62	0.16
Clover seed screenings	88.1	68.8	0.71	0.72	0.40	33.1	7.7	13.1	16	13.0	—	—	—	—
Clover seed, bur	93.4	57.8*	0.59*	0.57*	0.25*	23.0	5.7	26.8	34	9.5	—	—	—	—
Clover seed, sweet	92.0	67.0	0.69	0.68	0.40	40.6	4.6	12.3	15	3.8	—	—	—	—
Coconut meal, mech-extd	92.0	82.0	0.86	0.91	0.61	22.4	6.9	12.8	19	7.3	0.22	0.66	1.62	0.33
Coconut meal, solv-extd	91.0	75.0	0.78	0.81	0.53	23.4	2.7	16.0	24	7.4	0.19	0.66	1.63	0.36
Coconut meats, dried	96.0	109.0	1.16	1.32	0.75	7.5	67.3	4.0	5	0.03	0.20	0.61	—	—
Coffee grounds	88.0	20.0	0.16	0.36	0.00	13.0	15.0	41.0	68	2.0	0.10	0.08	—	—
Coffee hulls (coffee chaff)	90.0	51.1	0.51	0.48	0.16	17.3	8.2	36.2	45	5.4	—	—	—	—
Comfrey, prickly	13.2	58.3	0.59	0.58	0.26	19.7	2.4	13.8	17	18.2	—	0.55	—	—
Cookie byproduct	90.1	95.0	1.02	1.06	0.74	9.7	10.6	—	7	3.0	0.23	0.29	0.46	0.13
Corn bran	91.0	76.0	0.78	0.81	0.52	11.0	6.3	10.0	17	3.0	0.04	0.15	0.10	—
Corn cobs, ground	90.0	50.0	0.50	0.44	0.19	3.2	0.7	36.2	35	1.7	0.12	0.04	0.87	0.07
Corn distillers dried solubles	93.0	88.0	0.91	0.98	0.66	28.0	9.2	4.5	7	7.4	0.35	1.37	1.80	0.65
Corn distillers dried grains with solubles	91.0	90.0	1.05	1.13	0.75	29.0	10.8	8.0	17	5.0	0.12	0.80	1.04	0.33
Corn distillers stillage	7.0	92.0	0.96	1.03	0.70	22.0	8.1	8.0	10	5.0	0.14	0.72	0.20	—
Corn ears, ground	87.0	83.0	0.87	0.92	0.62	9.0	3.7	9.4	11	1.9	0.07	0.27	0.53	0.14
Corn gluten feed	90.0	80.0	0.87	0.92	0.62	22.0	3.2	9.0	12	7.5	0.10	0.82	1.30	0.42
Corn gluten meal, 60% protein	90.0	89.0	0.94	1.00	0.69	67.2	2.4	2.2	5	1.8	0.08	0.54	0.21	0.09
Corn stover	85.0	50.0	0.50	0.44	0.19	5.9	1.3	34.4	39	7.2	0.57	0.10	1.45	0.40
Corn, broom	88.4	77.3*	0.80*	0.83*	0.52*	10.6	4.8	5.8	7	4.1	—	—	—	—
Corn, cannery waste	23.0	70.0	0.72	0.73	0.42	8.8	2.7	22.0	29	5.9	3.40	0.63	—	—
Corn, cannery waste, silage	29.0	72.0	0.75	0.76	0.44	8.8	2.7	27.0	34	5.9	0.34	0.63	—	—
Corn, Egyptian	85.7	82.6*	0.86*	0.90*	0.59*	11.7	3.8	2.3	3	2.4	—	—	—	—
Corn, Egyptian brown	89.0	82.6*	0.86*	0.90*	0.59*	12.6	4.3	2.6	3	2.0	—	—	—	—
Corn, kafir	90.7	90.9	0.96	1.01	0.69	10.9	3.3	1.5	2	1.6	0.03	0.34	0.37	0.17
Corn, screenings	86.0	91.0	0.95	1.02	0.69	10.0	4.3	3.0	4	2.0	0.04	0.27	0.4	—
Cotton gin trash	90.0	44.0	0.43	0.39	0.03	7.4	1.7	36.7	46	5.9	0.65	0.12	—	—
Cottonseed hulls	91.0	45.0	0.45	0.35	0.11	4.1	1.7	47.8	73	2.8	0.15	0.09	0.87	0.14
Cottonseed meal 41% CP, mech-extd	93.0	78.0	0.81	0.85	0.56	44.3	5.0	12.8	20	6.6	0.21	1.16	1.45	0.58
Cottonseed meal 41% CP, solv-extd	91.0	76.0	0.79	0.83	0.55	45.6	1.3	14.1	19	7.0	0.22	1.21	1.39	0.55
Cottonseed meal 50% CP, solv-extd	93.0	75.0	0.78	0.81	0.53	54.0	1.4	8.8	12	7.1	0.19	1.24	1.56	0.50
Cottonseed, whole	92.0	96.0	1.01	1.10	0.77	23.0	20.0	24.0	34	4.8	0.21	0.64	1.00	0.46
Cottonseed, whole, extruded	92.0	87.0	0.91	0.98	0.67	26.0	9.5	32.0	44	5.0	0.17	0.68	1.30	0.38
Cottonseed, whole, without lint	90.0	96.0	1.01	1.10	0.77	25.0	23.8	17.2	26	4.5	0.12	0.54	1.18	0.41
Cowpea hay, sun-cured	90.0	59.0	0.60	0.58	0.32	19.4	3.1	26.7	34	11.3	1.40	0.35	2.26	0.45
Crab waste meal	91.0	29.0	0.30	0.37	0	32.0	3.0	11.0	13	43.0	15.00	1.88	0.50	—
Crambe meal, solv-extd	91.0	81.0	0.84	0.88	0.58	31.0	1.4	25.0	35	8.0	1.27	0.86	1.10	—
Crambe meal, mech-extd	92.0	88.0	0.91	0.98	0.65	0.28	17.0	24.0	33	7.0	1.22	0.78	1.00	—
Cranberry pulp meal	88.0	49.0	0.48	0.49	0.11	7.0	15.7	26.0	47	2.0	—	—	—	—
Crawfish waste meal	94.0	25.0	0.29	0.36	0	35.0	—	—	15	42.0	13.10	0.85	—	—
Date seeds, ground	90.0	78.0	0.81	0.83	0.54	6.6	9.0	15.7	20	—	—	—	—	—
Durra, brown	88.7	90.2	0.95	1.00	0.68	12.1	3.6	1.8	2	2.1	—	—	—	—
Durra, white	89.0	90.2	0.95	1.00	0.68	11.9	4.1	1.5	2	2.4	—	—	—	—
Dyna-ferm	75.0	48.0	0.48	0.48	0.28	29.3	0.1	0.3	1	2.7	—	—	—	—
Eggs w/o shells, dried	96.0	130.0	1.39	1.74	0.60	49.0	43.0	0.0	0	3.8	0.20	0.83	0.48	—
Fat	99.0	177.0	1.92	2.16	1.60	—	99.5	—	—	—	—	—	—	—
Feather meal, hydrolyzed	90.0	63.0	0.65	0.63	0.35	87.4	2.9	0.6	1	3.8	0.20	0.75	—	—
Fenugreek seed	90.7	71.7*	0.74*	0.75*	0.44*	29.2	6.2	10.4	13	4.0	—	—	—	—
Feterita	88.6	84.8*	0.89*	0.93*	0.61*	10.7	2.4	1.5	2	1.7	—	—	—	—
Figs, dried	76.0	76.2	0.79	0.81	0.50	—	—	0.0	0	—	—	—	—	—
Filaree, mature, dried	89.0	48.1	0.48	0.45	0.11	3.9	1.7	35.3	44	9.6	—	—	—	—
Fish meal	92.0	73.0	0.76	0.79	0.50	66.7	10.5	1.0	1	20.8	5.65	3.16	0.76	0.16
Fish solubles, dried	93.7	78.6	0.82	0.84	0.53	69.9	9.9	0.5	1	15.8	1.36	1.80	—	—
Flax hulls	91.0	38.0	0.37	0.31	0.00	8.5	1.5	31.5	39	10.4	—	—	—	—
Flax seed screenings	91.0	64.0	0.66	0.65	0.39	18.2	10.2	13.2	18	6.8	0.37	0.47	0.84	0.43
Flax seeds	94.0	115.0	1.22	1.43	0.74	25.6	38.3	6.7	8	5.2	0.23	0.55	0.84	—
Glycerol (glycerin)	88.0	90.0	0.94	1.00	0.68	0.0	0.0	0.0	0	5.0	—	—	—	—
Grain dust	92.0	73.0	0.75	0.77	0.48	10.0	2.2	11.0	—	10.0	0.30	0.18	—	—
Grape meal, dried	90.0	30.2	0.28	0.21	0.00	—	—	0.0	0	—	—	—	—	—
Grape pomace, dried	91.0	33.0	0.31	0.15	0.00	13.0	7.9	31.9	54	10.3	0.61	0.06	0.62	0.10

Feedstuff	As fed (% DM)	-----DM basis-----												
		TDN (%)	NE _l	NE _m (Mcal/lb.)			CP (%)	EE (%)	CF (%)	ADF (%)	Ash (%)	Ca (%)	P (%)	K (%)
Grape pomace, w/o stems, dried	90.6	61.5	0.63	0.62	0.30	14.0	7.9	33.3	42	6.0	—	—	—	—
Grape seeds	85.0	52.9*	0.53*	0.51*	0.18*	11.5	6.5	47.2	59	3.2	—	—	—	—
Grape/pear/apple pomace, dried	92.2	40.1	0.39	0.34	0.00	7.3	4.0	25.3	32	3.5	0.24	0.20	0.41	0.04
Grapefruit	14.0	85.0	0.89	0.93	0.62	8.1	4.4	10.3	13	3.7	0.51	0.15	—	—
Grapefruit pulp, dried	91.0	80.0	0.83	0.85	0.57	6.7	1.5	13.9	17	6.0	1.48	0.18	—	—
Hegari fodder	90.0	61.0	0.62	0.53	0.23	6.8	1.9	20.2	25	8.5	0.30	0.18	—	—
Hegari stover	90.0	48.0	0.48	0.45	0.11	6.2	2.0	31.1	39	11.0	0.37	0.09	—	—
Hempseed	91.1	90.1*	0.95*	1.00*	0.68*	20.0	35.8	16.5	21	4.6	—	—	—	—
Hop leaves	37.0	49.0	0.48	0.49	0.11	15.0	3.6	15.0	—	35.0	2.80	0.64	—	—
Hop vine silage	30.0	53.0	0.53	0.53	0.18	15.0	3.1	21.0	24	20.0	3.30	0.37	1.80	—
Hops spent	89.0	37.0	0.35	0.40	0.00	23.0	4.5	26.0	30	7.0	1.60	0.60	—	—
Malva	20.5	58.7*	0.60*	0.58*	0.26*	31.5	4.9	14.6	18	16.3	—	—	—	—
Manure, cage layer, dried	90.0	52.0	0.52	0.49	0.17	28.0	2.0	12.7	16	—	8.80	2.50	2.33	—
Manure, cattle, dried	93.0	45.0	0.45	0.40	0.05	12.7	2.5	37.5	47	—	0.87	1.60	0.50	—
Melon seeds, citron	91.5	64.5*	0.66*	0.66*	0.34*	9.1	19.1	45.9	57	2.4	—	—	—	—
Melons	4.1	70.7	0.73	0.74	0.43	11.5	3.3	23.0	29	6.6	—	—	—	—
Melons, pie	6.1	74.6	0.77	0.79	0.48	11.5	3.3	23.0	29	6.6	—	—	—	—
Milk, buttermilk	9.7	86.0	0.90	0.94	0.62	41.2	5.2	0.0	0	7.2	1.38	0.95	0.72	0.62
Milk, buttermilk, dried, feed-grade	93.0	86.0	0.90	0.94	0.62	34.2	5.6	0.4	1	10.8	1.07	0.73	1.35	0.10
Milk, cattle, skim	10.0	92.0	0.97	1.05	0.73	31.2	1.0	0.0	0	6.9	1.31	1.04	1.90	0.12
Milk, cattle, skim, dried	94.0	85.0	0.89	0.95	0.65	35.8	0.9	0.2	0	8.4	1.36	1.09	1.70	0.13
Milk, cattle, whole	12.0	129.0	1.38	1.52	0.98	26.7	29.5	0.0	0	6.3	0.95	0.76	1.12	0.10
Milk, cattle, whole, dried	96.0	119.0	1.27	1.39	1.01	26.5	27.8	0.2	0	5.7	0.95	0.76	1.08	0.10
Milk, colostrum	24.8	130.0	1.39	1.64	0.91	45.9	24.2	0.0	0	4.5	—	—	—	—
Millet hulls	88.4	13.6	0.10	0.00	0.00	4.4	1.4	51.8	7	10.8	—	—	—	—
Millet seeds	89.9	66.8	0.69	0.69	0.38	13.5	4.5	7.2	9	3.3	0.06	0.31	0.48	0.18
Mint slug silage	27.0	55.0	0.55	0.21	0.55	14.0	1.8	24	—	14	1.10	0.57	—	—
Molasses, beet	78.0	75.0	0.78	0.81	0.53	8.5	0.2	0.0	0	11.3	0.17	0.03	6.07	0.29
Molasses, cane	75.0	72.0	0.75	0.77	0.49	5.8	0.1	0.0	0	13.1	1.00	0.11	3.84	0.43
Molasses, cane, 3% H ₃ PO ₄	75.0	70.0	0.72	0.70	0.44	4.2	0.0	0.0	0	12.2	1.15	0.95	3.84	0.43
Molasses, citrus	68.0	75.0	0.78	0.81	0.53	8.2	0.3	0.0	0	7.9	1.72	0.13	0.14	0.21
Molasses, wood (Masonex)	76.0	60.0	0.61	0.60	0.34	0.7	0.4	1.0	2	4.1	0.83	0.12	—	—
Oat hay	90.0	54.0	0.54	0.54	0.20	10.0	2.3	31.0	39	8.0	0.40	0.27	1.60	—
Oat hulls	92.0	35.0	0.34	0.19	0.00	3.9	1.8	33.4	42	6.6	0.15	0.15	0.62	0.09
Oat middlings	91.0	95.0	1.00	1.09	0.76	16.4	7.0	3.9	6	2.5	0.08	0.49	0.55	0.16
Oat mill byproduct	92.0	31.0	0.29	0.23	0.00	6.1	2.1	29.4	37	6.4	0.16	0.22	0.60	0.87
Oat mill feed	92.9	33.7	0.32	0.26	0.00	3.1	1.1	35.1	44	6.4	0.11	0.05	—	—
Oat shorts	91.0	60.0	0.61	0.59	0.30	14.1	6.1	14.8	19	5.3	—	—	—	—
Oat straw	92.0	50.0	0.50	0.44	0.19	4.4	2.2	40.5	47	7.8	0.24	0.06	2.57	0.18
Oats, sprouted 5 days	13.2	70.0	0.72	0.73	0.42	18.1	5.2	19.7	25	4.1	—	—	—	—
Olive pulp w/ pits, dried	92.0	40.0	0.39	0.34	0.00	6.4	16.9	39.7	50	2.7	—	—	—	—
Olive pulp w/o pits, dried	95.0	78.0	0.81	0.83	0.54	14.7	28.8	20.3	25	3.6	—	—	—	—
Olive pulp w/o pits, solv-extd	91.0	36.0	0.35	0.29	0.00	14.2	3.9	26.9	34	8.5	—	—	—	—
Olive waste, dried	91.3	38.9	0.38	0.32	0.00	14.2	3.9	26.9	34	9.3	—	—	—	—
Olives, cull	42.0	89.0	0.93	0.99	0.67	4.5	35.5	27.2	34	5.1	0.01	0.10	—	—
Onion waste, dried	89.4	61.2*	0.63*	0.62*	0.30*	9.7	4.9	22.1	28	6.4	—	—	—	—
Onions, dried	91.4	57.6*	0.59*	0.57*	0.25*	12.6	2.0	22.6	28	8.0	1.80	0.21	1.76	0.16
Orange byproducts, dried	90.6	70.2*	0.73*	0.73*	0.42*	8.3	3.0	14.7	18	3.4	0.71	0.11	—	—
Orange pulp, ammoniated, dried	89.0	73.0	0.76	0.77	0.46	16.5	3.7	13.9	17	3.8	0.71	0.11	—	—
Orange pulp, dried	88.0	78.0	0.81	0.86	0.57	8.5	1.7	9.6	16	3.8	0.71	0.11	0.62	0.16
Orange pulp, silage	11.3	64.9*	0.67*	0.66*	0.35*	8.8	2.2	17.7	22	5.3	—	—	—	—
Orange pulp, wet	25.0	77.0	0.80	0.83	0.51	8.9	1.8	13.0	16	3.8	0.21	0.28	1.05	—
Oranges	13.0	78.0	0.81	0.86	0.57	7.5	1.9	11.3	14	4.4	0.57	0.13	—	—
Palm nut meal	89.6	83.7	0.88	0.91	0.60	18.8	10.6	26.8	34	4.8	—	—	—	—
Parsnips	13.7	89.2	0.94	0.98	0.67	11.7	1.4	7.3	9	5.1	—	—	—	—
Pea hay	88.0	58.0	0.59	0.56	0.27	13.6	2.5	30.2	38	7.6	1.39	0.28	1.42	0.38
Pea meal, dried	90.0	84.0	0.88	0.91	0.61	19.7	1.6	26.3	33	3.4	—	—	—	—
Pea pods, dried	88.0	67.0	0.69	0.68	0.40	10.8	1.1	35.6	45	5.3	1.47	0.23	—	—
Pea vine silage	25.0	57.0	0.58	0.55	0.29	13.1	3.3	29.8	49	9.0	1.31	0.24	1.40	0.39
Pea vine straw	85.0	56.0	0.57	0.54	0.24	8.9	1.8	39.5	49	6.8	1.00	0.11	1.20	—
Peaches	10.0	80.0	0.83	0.86	0.55	8.9	3.7	10.3	13	—	—	—	—	—
Peaches, dried	90.0	77.8	0.81	0.83	0.52	—	—	0.0	0	—	—	—	—	—
Peanut hay, sun-cured	91.0	55.0	0.56	0.52	0.26	10.8	3.4	33.2	41	8.6	1.23	0.15	1.38	0.49
Peanut hulls	91.0	22.0	0.18	0.36	0	8.0	1.5	63.0	65	5.0	0.20	0.07	0.90	—
Peanut meal, mech-extd	93.0	83.0	0.87	0.92	0.62	52.0	6.3	7.5	10	5.5	0.20	0.61	1.25	0.31
Peanut meal, solv-extd	92.0	77.0	0.80	0.85	0.55	52.3	1.4	10.8	18	6.3	0.29	0.68	1.23	0.17
Peanut skins	94.0	65.0	0.67	0.65	0.37	17.4	25.5	12.6	16	3.0	0.19	0.20	—	—
Pear pulp, dried, ground	91.5	70.6	0.73	0.74	0.43	6.1	2.1	23.8	30	4.0	2.38	0.12	—	—
Pears	17.3	86.7	0.91	0.95	0.64	—	—	0.0	0	—	—	—	—	—
Pears, cannery residue	15.2	69.3	0.72	0.72	0.41	3.9	1.3	17.1	21	2.0	—	—	—	—
Peas, Canada, field	85.0	71.0*	0.73*	0.75*	0.43*	27.9	0.9	9.3	12	2.8	—	—	—	—
Peas, cow	85.2	74.1*	0.77*	0.79*	0.47*	24.4	1.6	4.8	6	3.8	0.10	0.50	—	—
Peas, cull, dried	90.0	83.0	0.87	0.89	0.59	26.5	1.2	6.0	9	3.1	0.13	0.47	—	—

BYPRODUCTS & UNUSUAL FEEDSTUFFS

Feedstuff	As	DM basis												
	fed (% DM)	TDN (%)	NE _i (Mcal/lb.)	NE _m	NE _g	CP (%)	EE (%)	CF (%)	ADF (%)	Ash (%)	Ca (%)	P (%)	K (%)	Mg (%)
Peas, field	90.7	82.2	0.86	0.89	0.58	25.8	1.3	6.7	8	3.3	0.19	0.55	1.14	—
Pineapple bran (pulp)	87.0	68.0	0.70	0.71	0.44	4.6	1.5	20.9	37	3.5	0.27	0.13	—	—
Pineapple greenchop	18.0	56.0	0.57	0.55	0.24	7.6	2.2	27.0	35	6.4	0.28	0.08	—	—
Pineapple juice presscake	21.0	71.0	0.74	0.75	0.45	5.3	0.7	26.0	34	2.6	0.28	0.08	—	—
Pineapple stummeal	46.0	64.0	0.66	0.65	0.36	3.0	0.8	22.0	30	1.9	0.28	0.08	—	—
Pineapple tops	16.0	42.8	0.42	0.38	0.04	10.0	3.1	23.1	29	9.4	—	—	—	—
Pineapples	14.7	80.1	0.84	0.86	0.55	2.7	1.4	2.7	3	2.7	0.14	0.07	—	—
Pomegranate pulp	26.0	68.4	0.71	0.71	0.40	8.4	4.9	16.6	21	4.0	—	—	—	—
Potato meal, dried	89.0	90.0	0.95	1.02	0.70	8.4	0.4	7.3	9	3.4	0.16	0.25	2.15	—
Potatoes, fresh	23.0	81.0	0.85	0.90	0.60	9.5	0.4	2.4	3	4.8	0.04	0.24	2.17	0.14
Potatoes, dried	91.0	81.0	0.85	0.90	0.60	8.9	0.5	2.3	3	8.7	0.08	0.22	2.15	0.12
Potato silage	25.0	82.0	0.86	0.91	0.61	7.6	0.4	4.0	5	5.5	0.04	0.23	2.13	0.14
Prune mix	81.8	54.7	0.55	0.53	0.21	6.3	2.4	19.8	25	6.2	—	—	—	—
Prunes, dried	90.0	77.8	0.81	0.83	0.52	—	—	0.0	0	—	—	—	—	—
Prunes, w/pits	82.0	81.0	0.85	0.88	0.56	5.3	2.9	13.1	16	—	0.13	0.11	—	—
Prunes, w/o pits	80.0	93.0	0.98	1.04	0.72	4.1	1.4	2.2	3	—	0.04	0.12	—	—
Pumpkins	9.0	85.0	0.89	0.93	0.62	16.2	8.9	14.2	18	8.9	0.24	0.43	3.32	—
Raisin pulp, dried	89.0	53.0	0.53	0.50	0.19	10.7	8.7	18.0	23	6.0	—	—	—	—
Raisins, cull	85.0	48.0	0.48	0.44	0.10	4.0	1.1	5.2	7	3.5	—	—	—	—
Rapeseed oilmeal, mech-extd (Canola meal)	94.0	74.0	0.77	0.80	0.51	37.4	7.4	16.5	18	7.2	0.76	1.15	0.90	0.59
Rapeseed oilmeal, solv-extd (Canola meal)	92.0	75.0	0.78	0.81	0.53	44.0	1.2	10.1	18	7.8	0.73	1.13	0.90	0.58
Rice bran, solv-extd	90.0	62.0	0.64	0.63	0.34	15.9	3.4	13.0	17	15.1	0.07	1.62	1.91	1.04
Rice bran 13% fat	91.0	70.0	0.73	0.74	0.47	14.1	15.1	12.8	18	12.8	0.08	1.70	1.92	1.04
Rice byproduct (bran and hulls)	91.0	33.0	0.31	0.25	0.00	6.7	5.6	33.0	53	19.1	0.08	0.59	—	—
Rice hulls	92.0	12.0	0.08	0.00	0.00	3.3	0.8	42.9	72	20.6	0.10	0.08	0.57	0.83
Rice middlings	88.1	66.9*	0.69*	0.69*	0.38*	15.6	6.8	9.6	12	9.6	—	—	—	—
Rice polishings	90.0	91.0	0.96	0.99	0.65	14.2	14.9	3.0	4	9.9	0.05	1.31	1.30	0.72
Rice straw	91.0	41.0	0.40	0.35	0.02	4.5	1.4	35.1	44	16.6	0.21	0.08	1.32	0.11
Rutabaga tops	10.9	68.4	0.71	0.71	0.40	18.6	4.6	14.1	18	19.9	—	—	—	—
Rutabaga tops, dried	87.3	55.1	0.56	0.54	0.21	11.2	2.2	9.8	12	39.4	—	—	—	—
Rutabagas	11.4	85.6	0.90	0.94	0.62	10.5	1.8	11.4	14	10.5	0.49	0.29	1.84	0.18
Rye bran	91.0	61.0	0.62	0.60	0.32	17.5	3.4	7.6	10	5.2	—	—	—	—
Rye distillers dried grains	92.0	61.0	0.63	0.61	0.35	23.5	7.8	13.4	18	2.5	0.16	0.52	0.08	0.18
Rye distillers dried grains w/solubles	90.5	62.1	0.64	0.63	0.31	30.1	4.5	9.0	11	7.1	—	—	—	—
Rye distillers dried solubles	94.4	69.6*	0.72*	0.73*	0.41*	37.2	1.3	3.6	5	7.6	0.37	1.26	—	—
Rye middlings	90.0	80.0	0.83	0.85	0.57	18.4	3.8	5.8	7	4.0	0.07	0.70	0.70	—
Rye mill run	90.0	75.0	0.78	0.79	0.51	18.5	3.7	5.1	6	4.2	0.08	0.71	0.66	0.26
Safflower hulls	91.3	13.3	0.09	0.00	0.00	3.6	3.7	58.2	73	1.8	—	—	—	—
Safflower meal 20% CP, mech-extd	91.0	60.0	0.61	0.60	0.34	22.1	6.7	35.4	41	4.1	0.27	0.78	0.79	0.36
Safflower meal 20% CP, solv-extd	92.0	57.0	0.58	0.55	0.29	25.4	1.5	32.5	41	5.9	0.37	0.81	0.82	0.37
Safflower meal 42% CP, solv-extd	92.0	73.0	0.76	0.79	0.50	46.9	1.4	14.7	21	8.2	0.38	1.40	1.19	1.11
Safflower seeds	94.0	89.0	0.94	1.00	0.69	17.4	35.1	28.6	40	3.1	0.26	0.67	0.79	0.36
Sagebrush browse	50.5	49.9	0.50	0.47	0.14	12.9	9.2	24.8	31	9.7	1.01	0.25	—	0.49
Saltgrass hay, sun-cured	89.2	53.5	0.54	0.52	0.19	8.9	2.1	31.6	40	12.7	2.37	0.10	—	—
Screenings, grain, good grade	90.0	70.0	0.72	0.70	0.44	14.2	5.2	13.1	16	9.8	0.48	0.43	—	—
Screenings, refuse	90.0	56.0	0.57	0.55	0.29	11.5	4.3	31.0	40	10.6	0.46	0.32	—	—
Sesame meal, mech-extd	93.0	77.0	0.80	0.85	0.55	49.1	7.5	6.1	17	12.0	2.17	1.46	1.35	0.50
Sesame oil cake	94.7	88.8*	0.93*	0.98*	0.67*	38.0	26.0	4.0	5	7.8	—	—	—	—
Sesame seeds	92.0	104.0	1.10	1.23	0.74	24.2	46.6	11.2	14	6.1	1.02	0.76	—	—
Shrimp waste meal	90.0	48.0	0.47	0.48	0.09	50.0	5.5	11.0	—	25.0	8.50	1.75	—	—
Sloughgrass, American, hay, mature, sun-cured	94.6	53.2	0.54	0.51	0.19	5.0	1.3	37.9	47	11.6	0.42	0.14	—	—
Sorghum distillers dried grains w/solubles	95.0	84.0	0.88	0.91	0.61	34.9	9.9	10.7	13	4.4	0.18	0.97	—	—
Sorghum distillers dried grains	94.0	83.0	0.87	0.92	0.62	34.4	9.5	12.7	16	3.8	0.16	0.74	0.38	0.19
Sorghum distillers dried solubles	93.0	83.0	0.87	0.90	0.60	28.5	5.9	4.2	5	9.1	0.40	0.66	—	—
Sorghum gluten feed, dried	91.0	76.0	0.79	0.80	0.52	28.6	3.6	7.8	10	9.4	0.10	0.66	1.61	0.49
Sorghum silage, 30% DM	30.0	60.0	0.61	0.60	0.34	7.5	3.0	27.9	38	8.7	0.35	0.21	1.37	0.29
Sorghum stover, dried	88.0	54.0	0.55	0.50	0.25	5.2	1.7	33.5	41	11.0	0.52	0.13	1.20	0.28
Sorrel seeds	86.8	67.7*	0.70*	0.70*	0.39*	9.1	4.4	19.4	24	2.4	—	—	—	—
Soybean hay, sun-cured	94.0	53.0	0.54	0.49	0.24	17.8	5.4	29.8	40	7.7	1.26	0.27	0.97	0.79
Soybean hulls	91.0	77.0	0.80	0.85	0.55	12.1	2.1	40.1	50	5.1	0.69	0.21	1.27	—
Soybean meal, 44% CP solv-extd	89.0	84.0	0.88	0.94	0.64	49.9	1.5	7.0	10	7.3	0.30	0.68	1.98	0.30
Soybean meal, 48% CP solv-extd	90.0	87.0	0.91	0.98	0.67	55.1	1.0	3.7	6	6.5	0.29	0.70	2.30	0.32
Soybean mill feed, ground	89.4	48.4	0.48	0.45	0.12	14.9	1.8	36.9	46	5.0	0.42	0.21	—	—
Soybean mill run	88.0	44.0	0.43	0.39	0.03	13.6	1.4	40.7	51	5.1	0.42	0.21	—	—
Soybean silage	27.0	55.0	0.56	0.52	0.26	17.3	2.7	28.4	40	9.7	1.36	0.47	0.93	0.38
Soybean straw	88.0	44.0	0.44	0.44	0.00	5.2	1.4	44.0	55	5.8	1.59	0.06	0.53	0.92
Soybeans, whole	92.0	91.0	0.96	1.03	0.71	42.8	18.8	5.8	10	5.5	0.27	0.65	1.82	0.29
Sugarcane bagasse	91.0	44.0	0.44	0.34	0.10	1.5	0.4	49.0	61	5.5	0.90	0.29	0.50	0.10
Sugarcane strippings	45.0	44.0	0.44	0.39	0.03	3.6	0.9	45.0	56	10.3	0.35	0.27	—	—

Feedstuff	As fed (% DM)	DM basis												
		TDN (%)	NE _i (Mcal/lb.)	NE _m	NE _g	CP (%)	EE (%)	CF (%)	ADF (%)	Ash (%)	Ca (%)	P (%)	K (%)	Mg (%)
Sunflower meal, mech-extd	93.0	74.0	0.77	0.80	0.51	44.6	8.7	13.1	17	7.1	0.42	1.14	1.14	0.78
Sunflower meal, solv-extd	93.0	65.0	0.67	0.67	0.40	49.8	3.1	12.2	16	8.1	0.44	0.98	1.14	0.77
Sunflower seeds	94.0	83.0	0.87	0.90	0.60	17.9	27.7	31.0	39	3.3	0.18	0.56	0.71	—
Sunflower seeds w/o hulls	95.0	121.0	1.29	1.55	0.71	27.1	46.5	5.3	7	4.0	0.17	0.94	0.96	—
Sweet potato meal	90.0	80.0	0.83	0.85	0.57	5.4	1.0	3.7	5	4.5	0.17	0.16	—	—
Sweet potato tops	20.0	49.4*	0.50*	0.46*	0.13*	19.5	2.5	14.5	18	22.0	—	—	—	—
Sweet potato tops, dried	91.0	57.0	0.58	0.55	0.25	13.9	3.6	21.0	26	11.3	—	—	—	—
Sweet potatoes	31.0	80.0	0.83	0.85	0.57	5.0	1.3	6.0	8	3.6	0.09	0.13	1.19	0.16
Tangerine pulp, dried	87.0	80.0	0.83	0.87	0.55	8.1	5.7	11.0	14	5.0	1.57	0.14	—	—
Tapioca meal (cassava, starch byproduct)	86.8	81.1	0.85	0.88	0.57	1.0	0.8	5.3	7	2.1	—	0.03	—	—
Tomato leaves w/stems	14.0	46.7*	0.47*	0.43*	0.09*	26.4	1.7	15.4	19	26.6	—	—	—	—
Tomato pomace, dried	92.0	58.0	0.59	0.57	0.31	23.5	10.3	26.4	50	7.5	0.43	0.60	3.63	0.20
Tomato pomace, silage	29.5	63.9*	0.66*	0.65*	0.34*	19.2	14.6	44.9	56	4.5	0.50	0.47	—	—
Tomato skins w/juice, dried	89.6	63.0	0.65	0.64	0.32	20.7	2.5	19.1	24	9.8	0.61	0.46	—	—
Tomatoes	6.0	69.0	0.71	0.70	0.43	16.4	5.0	9.1	11	—	0.16	0.49	4.21	—
Turnip tops	13.0	67.0	0.69	0.68	0.40	21.8	2.6	10.3	13	16.8	2.92	0.51	3.00	0.92
Turnips, fresh	9.0	85.0	0.89	0.95	0.65	11.8	1.9	11.5	34	8.9	0.59	0.26	2.99	0.22
Vetch seeds	90.7	68.1	0.70	0.71	0.39	32.6	0.9	6.3	8	3.4	—	—	—	—
Walnut meal, black	93.0	70.8	0.73	0.74	0.43	31.7	11.4	18.2	23	5.7	—	—	—	—
Walnut meal, English	93.3	66.7	0.69	0.69	0.37	17.1	6.4	26.8	34	4.9	—	—	—	—
Walnut meats, ground	91.0	94.0	0.99	1.06	0.69	45.8	9.6	3.8	5	5.8	—	—	—	—
Watergrass seed	90.0	69.1*	0.71*	0.72*	0.41*	7.3	3.9	14.2	18	5.0	—	—	—	—
Wheat bran	89.0	70.0	0.73	0.74	0.47	17.1	4.4	11.3	15	6.9	0.13	1.38	1.56	0.60
Wheat chaff, sun-cured	92.6	39.8	0.39	0.34	0.00	5.5	1.7	32.2	40	18.0	0.20	0.15	—	—
Wheat germ meal	90.0	95.0	1.00	1.11	0.70	28.1	10.2	4.0	5	5.8	0.06	1.16	0.98	0.28
Wheat hay	90.0	57.0	0.57	0.57	0.25	9.0	2.0	29.0	38	8.0	0.21	0.22	1.40	—
Wheat middlings	89.0	69.0	0.71	0.73	0.45	18.4	4.9	8.2	10	5.2	0.13	0.99	1.13	0.40
Wheat mill run	90.0	79.0	0.83	0.87	0.58	17.2	4.6	9.2	11	5.9	0.11	1.13	1.33	0.52
Wheat shorts, 7% CF	88.0	73.0	0.76	0.79	0.50	18.6	5.2	7.7	10	4.9	0.10	0.91	1.06	0.28
Wheat straw	89.0	44.0	0.44	0.34	0.10	3.6	1.8	41.6	54	7.8	0.18	0.50	1.42	0.12
Whey product, dried	93.0	79.0	0.83	0.87	0.58	17.9	1.1	0.2	0	16.5	1.71	1.12	2.16	0.23
Whey dried	93.0	81.0	0.85	0.90	0.60	14.2	0.7	0.2	0	9.8	0.92	0.82	1.23	0.14
Whey, condensed, 42% solids	42.0	78.0	0.81	0.81	0.54	14.0	4.3	0.0	0	10.1	0.98	0.81	—	—
Whey, liquid	7.0	81.0	0.85	0.90	0.60	14.2	0.7	0.2	0	9.8	0.73	0.65	2.75	—
Yeast, brewers, dried	93.0	79.0	0.83	0.87	0.58	46.9	0.9	3.1	4	7.1	0.13	1.49	1.79	0.27
Yeast, torula, dried	93.0	78.0	0.81	0.85	0.56	52.7	1.7	2.4	4	8.3	0.54	1.71	2.04	0.18

