

# Feed Ingredient Composition for Beef Cattle

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It is essential to know feedstuff nutrient content in order to properly formulate beef cattle diets. This publication provides estimates of the nutrient composition of feedstuffs that are used commonly in Missouri. Estimates presented in the following table are adapted from *Nutrient Requirements of Beef Cattle*, 7th Revised Edition, (National Research Council, 2000). Readers are reminded that the true nutrient content of feedstuffs varies. Tabular nutrient values such as those depicted in this publication should not be interpreted as guarantees of nutritional value. They are to serve only as guides when comparing the relative value of feedstuffs. They should not be used to replace compositional analysis of feedstuffs or quality control procedures. Readers are directed to pay close attention to the units of measure for individual nutrient analyses. When comparing feedstuffs, make sure that the units of measure are the same. Nutrient analyses in relation to feedstuff cost are not the only means by which to compare the economic value of feedstuffs. Some feedstuffs have intrinsic value as sources of fiber, sources of oil, mixing agents, or flavoring agents that are not reflected by nutrient analyses.

This publication uses abbreviations to refer to specific nutrients or chemical components of feedstuffs. All abbreviations are defined as follows:

**DM** = Dry matter = the moisture-free portion of a feedstuff

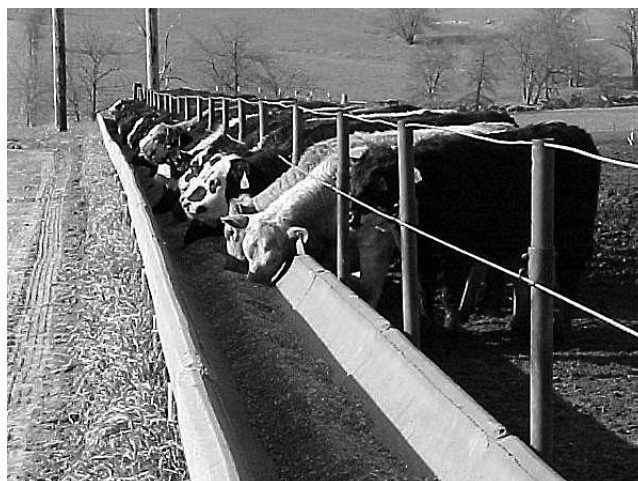
**TDN** = Total digestible nutrients = the adjusted sum of digestible protein, fat, and nitrogen-free extract contained in a feedstuff

**NE<sub>m</sub>** = Net energy for maintenance = a measure of the efficiency with which metabolizable energy is used for maintenance

**NE<sub>g</sub>** = Net energy for gain = a measure of the efficiency with which metabolizable energy is used for tissue growth

**CP** = Crude protein = the percentage of nitrogen in a feedstuff multiplied by 6.25

**RDP** = Ruminally degradable protein = the proportion of CP that is available for degradation by ruminal microbes



**NDF** = Neutral detergent fiber = a functional measurement of the cellulose, hemicellulose, and lignin in a feedstuff

**eNDF** = Effective neutral detergent fiber = the proportion of NDF that provides ruminal health-sustaining plant fiber to the diet

**Mcal** = Megacalorie = 1000 kilocalories = a unit of measurement of dietary energy

**IU** = International unit = a pharmaceutical unit of measurement

**ppm** = Parts per million = a unit of measurement that is equivalent to milligrams per kilogram

Many of the feedstuffs listed in this publication are byproducts of grain or oilseed milling. Nutrient composition of these types of feedstuffs typically varies over time and between dealers. This is particularly true of mineral values. Purchasers of byproduct feedstuffs are encouraged to request guaranteed analyses from feed dealers or to submit a representative sample for compositional analysis to a reputable nutrition laboratory. Nutrition laboratories can be located through the University of Missouri Agricultural Electronic Bulletin Board ([http://agebb.missouri.edu/haylst/t\\_labs.htm](http://agebb.missouri.edu/haylst/t_labs.htm)).





Common name	DM (%AF)	TDN (%DM)	NE <sub>m</sub> (Mcal/lb)	NE <sub>g</sub> (Mcal/lb)	CP (%DM)	RDP (%CP)	NDF (%DM)	eNDF (% NDF)	Fat (%DM)	Calcium (%DM)	Phosphorus (%DM)	Magnesium (%DM)	Potassium (%DM)	Sulfur (%DM)	Sodium (%DM)	Vitamin A (1000 IU/lb)	Vitamin D (1000 IU/lb)	Vitamin E (IU/lb)	Selenium (ppm)	Zinc (ppm)	Copper (ppm)	Manganese (ppm)	Cobalt (ppm)	Iodine (ppm)	Iron (ppm)
Potassium bicarbonate	99.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Potassium chloride	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.34	50.00	0.45	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	600.00
Potassium iodide	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	681700	0.00
Potassium sulfate	98.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.61	41.84	17.35	0.09	0.00	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	710.00
Sodium bicarbonate	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sodium chloride	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sodium selenite	98.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.60	0.00	0.00	0.00	456000	0.00	0.00	0.00	0.00	0.00	0.00
Sodium sulfate	97.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.95	14.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zinc oxide	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	780000	0.00	0.00	0.00	0.00	0.00
Zinc sulfate	99.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	17.68	0.00	0.00	0.00	0.00	0.00	363600	0.00	10.00	0.00	0.00	10.00
<b>Roughages</b>																									
Alfalfa pellets, 17%	91.00	50.00	0.44	0.19	14.00	79.00	58.00	90.00	1.30	1.18	0.21	0.22	2.07	0.25	0.08	8.75	0.45	0.00	0.55	22.10	13.70	38.50	0.41	0.00	170.00
Barley straw	91.00	40.00	0.27	0.03	4.40	30.00	72.50	100.00	1.90	0.30	0.07	0.23	2.37	0.17	0.14	0.45	0.32	0.00	0.00	7.00	5.40	16.00	0.07	0.00	200.00
Corn cobs, ground	90.00	50.00	0.44	0.19	2.80	22.00	87.00	56.00	0.60	0.12	0.04	0.07	0.89	0.47	0.08	0.54	0.00	0.00	0.08	5.00	7.00	6.00	0.13	0.00	230.00
Corn stalks, post-harvest grazing	50.00	65.85	0.68	0.41	6.50	69.00	65.00	100.00	2.10	0.62	0.09	0.00	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cotton gin trash	90.00	44.00	0.39	0.03	7.40	0.00	80.00	100.00	1.70	0.65	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cottonseed hulls	91.00	45.00	0.35	0.11	4.10	0.00	80.00	100.00	1.70	0.15	0.09	0.14	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oat hulls	92.00	35.00	0.19	0.00	3.90	0.00	80.00	100.00	1.80	0.15	0.15	0.09	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oat straw	92.20	45.00	0.36	0.11	4.40	55.00	74.40	100.00	2.20	0.23	0.06	0.17	2.53	0.22	0.42	2.86	0.45	0.00	0.00	6.00	10.30	31.00	0.00	0.00	164.00
Soybean straw	88.00	44.00	0.44	0.00	5.20	0.00	80.00	100.00	1.40	1.59	0.06	0.92	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wheat straw	89.00	41.00	0.29	0.05	3.50	31.00	78.90	100.00	2.00	0.17	0.05	0.12	1.41	0.19	0.14	0.45	0.03	0.00	0.00	6.00	3.60	41.00	0.05	0.00	157.00
<b>Protein supplements</b>																									
Bloodmeal, porcine	90.00	66.00	0.68	0.41	93.79	25.00	0.92	0.00	1.70	0.40	0.32	0.04	0.31	0.80	0.40	0.00	0.00	0.00	0.80	33.00	13.90	11.70	0.01	0.00	2281.00
Canola meal	92.00	69.00	0.73	0.45	40.90	67.85	27.20	23.00	3.47	0.70	1.20	0.57	1.37	1.17	0.03	0.00	0.00	0.00	0.00	71.50	7.95	55.80	0.00	0.00	211.00
Corn gluten meal, 40% cp	91.00	84.00	0.94	0.63	46.80	38.08	37.00	36.00	2.40	0.16	0.51	0.06	0.03	0.22	0.10	13.51	0.00	14.51	1.11	190.20	30.30	8.50	0.09	0.00	430.00
Corn gluten meal, 60% cp	91.00	89.00	1.00	0.69	66.30	41.00	8.90	36.00	2.56	0.07	0.61	0.15	0.48	0.90	0.06	6.35	0.00	11.79	0.00	61.40	4.76	20.60	0.09	0.00	159.00
Cottonseed meal, 41% mech. Extr.	92.00	75.00	0.81	0.53	46.10	57.00	28.90	36.00	3.15	0.20	1.16	0.65	1.65	0.42	0.07	0.00	0.00	0.00	0.98	74.00	16.50	26.90	0.53	0.00	162.00
Cottonseed meal, 41% solv. Extr.	92.00	78.00	0.85	0.56	44.00	57.00	28.00	36.00	5.00	0.16	0.76	0.35	1.22	0.26	0.03	0.00	0.00	0.00	0.00	0.00	53.90	12.20	0.00	0.00	160.00
Cottonseed meal, 43% mech. Extr.	92.00	75.00	0.81	0.53	48.90	57.00	28.00	36.00	1.70	0.16	0.76	0.35	1.22	0.26	0.03	0.00	0.00	0.00	0.00	0.00	53.90	12.20	0.00	0.00	160.00
Feather meal	90.00	68.00	0.71	0.44	85.80	30.00	39.00	23.00	7.21	1.19	0.68	0.06	0.20	1.85	0.24	0.00	0.00	0.00	0.98	105.00	14.20	12.00	0.13	0.05	702.00
Fish meal	90.00	73.00	0.78	0.50	67.90	40.00	2.00	10.00	10.70	5.46	3.14	0.16	0.77	0.58	0.44	0.00	0.00	5.90	2.34	157.00	11.30	40.00	0.12	1.19	594.00
Linseed meal	90.00	65.40	0.54	0.28	32.60	70.00	36.00	0.00	1.70	0.40	0.83	0.55	1.22	0.37	0.09	0.00	0.00	0.00	1.05	69.00	19.00	39.00	0.00	0.00	369.00
Peanut meal	92.40	77.00	0.84	0.55	52.90	80.00	14.00	0.00	2.30	0.32	0.66	0.17	1.28	0.33	0.03	0.00	0.00	0.00	0.00	36.00	16.00	29.00	0.00	0.07	155.00
Soybean meal, 44% solv. Extr.	89.00	84.00	0.94	0.63	49.90	65.00	14.90	23.00	1.60	0.40	0.71	0.31	2.22	0.46	0.04	0.00	0.00	0.00	0.51	57.00	22.40	35.00	0.12	0.00	185.00
Soybean meal, 48% solv. Extr.	90.00	87.00	0.98	0.67	54.00	65.00	7.79	23.00	1.10	0.29	0.71	0.33	2.36	0.48	0.01	0.00	0.00	0.00	0.22	63.00	22.50	41.00	0.12	0.12	145.00
Soybean, whole roasted	90.00	94.00	1.07	0.75	42.80	38.31	13.40	100.00	18.80	0.27	0.65	0.29	1.80	0.24	0.00	0.73	0.00	16.60	0.12	61.80	19.80	39.60	0.00	0.00	100.00
Soybeans, whole raw	90.00	94.00	1.07	0.75	40.34	75.00	14.90	100.00	18.20	0.27	0.65	0.27	2.01	0.35	0.04	0.73	0.00	16.60	0.12	59.00	14.58	34.50	0.00	0.00	182.00
Sunflower seed meal	90.00	65.00	0.67	0.40	25.90	80.00	40.00	23.00	2.90	0.45	1.02	0.70	1.27	0.33	0.03	0.00	0.00	0.00	2.30	105.00	4.00	20.00	0.00	0.00	33.00
<b>Silages</b>																									
Alfalfa silage	38.00	58.00	0.56	0.31	17.00	91.00	47.00	82.00	3.10	1.74	0.27	0.33	2.35	0.31	0.16	70.29	0.00	0.00	0.00	40.70	11.10	49.70	0.00	0.00	280.00
Barley silage	39.00	60.00	0.59	0.33	11.90	86.00	56.80	65.00	2.92	0.52	0.29	0.19	2.57	0.24	0.12	0.00	0.00	0.00	0.15	24.50	7.70	44.80	0.72	0.00	375.00
Corn silage, 25% grain	29.00	61.00	0.61	0.35	8.30	76.00	55.00	80.00	2.10	0.31	0.27	0.22	1.22	0.12	0.03	26.35	0.00	0.00	0.00	21.20	9.20	41.10	0.01	0.00	180.00
Corn silage, 35% grain	33.00	69.00	0.73	0.45	8.60	77.00	46.00	80.00	2.60	0.31	0.27	0.22	1.22	0.12	0.03	26.35	0.00	0.00	0.00	21.20	9.20	41.10	0.01	0.00	180.00
Corn silage, 40% grain	33.00	66.00	0.68	0.41	9.20	78.00	45.00	80.00	3.10	0.31	0.27	0.22	1.22	0.12	0.03	26.35	0.00	0.00	0.00	21.20	9.20	41.10	0.01	0.00	180.00
Corn silage, 45% grain	34.00	72.00	0.77	0.49	8.65	78.00	43.00	80.00	3.09	0.25	0.22	0.18	1.14	0.12	0.01	8.16	0.05	0.00	0.00	17.70	4.18	23.50	0.01	0.00	131.00
Corn silage, 50% grain	35.00	75.00	0.81	0.53	8.00	75.00	41.00	70.00	3.50	0.31	0.27	0.22	1.22	0.12	0.03	26.35	0.00	0.00	0.00	21.20	9.20	41.10	0.01	0.00	180.00
Corn silage, immature (no ears)	25.00	65.00	0.67	0.40	9.00	78.00	60.00	80.00	3.10	0.52	0.31	0.31	1.64	0.00	0.00	0.00	0.00	0.00	0.00	184.50	0.00	0.00	0.00	0.00	490.00
Oat silage	36.40	59.00	0.58	0.32	12.70	85.00	58.10	98.00	3.12	0.58	0.31	0.21	2.88	0.24	0.09	0.00	0.00	0.00	0.07	29.80	8.00	66.30	0.00	0.00	367.00
Sorghum-sudan silage	28.00	55.00	0.52	0.26	10.80	72.00	68.00	41.00	2.80	0.50	0.21	0.42	2.61	0.06	0.02	79.55	0.00	0.00	0.00	0.00	36.60	98.80	0.27	0.00	120.00
Sorghum silage	30.00	60.00	0.59	0.33	9.39	73.00	60.80	41.00	2.64	0.49	0.22	0.28	1.72	0.12	0.01	0.00	0.00	0.00	0.03	32.00	9.20	68.50	0.30	0.00	383.00
Wheat silage	35.00	57.00	0.55	0.29	12.50	81.00	60.70	61.00	2.50	0.44	0.29	0.17	2.24	0.21	0.04	26.76	0.00	0.00	0.00	28.00	9.00	79.50	0.00	0.00	386.00

