

Feed value varies in different feeds

Key tips

Nutritional values can vary widely, especially for fodder and co-products.

Get to know the variation in key nutrients for a range of feed types.

Crunch the numbers before you buy using the feed lab analysis results.

Nutritional values vary due to growing conditions and how feed is harvested, conserved or manufactured. Hays, silages and co-products are particularly variable. The wider the variation, the more important it is to look beyond the price tag and calculate value per unit of energy and protein, based on an actual feed analysis of the feed. Only then will you know if the feed is good value for money.

Common terms used in Table 1

Feed ingredient

Table 1 lists typical feed values for different feeds commonly fed to dairy cows, including grains, concentrates, hays and silages, and high-fibre co-products, including straws.

Dry Matter (DM)

This column notes the DM value of the feed – expressed as a percentage. Pay particular attention to the range.

Metabolisable Energy (ME)

The values here are averages, but pay particular attention to the range. Decide where this fits in with other feeds you are offering. Determine how many megajoules (MJ) of ME per kilogram you need to achieve your target milk production and cow body condition.

Crude Protein (CP)

Cow requirements for CP vary according to stage of lactation and range from 16–18% in early lactation, dropping to 11–12% during the dry period. Pay particular attention to the range in values for CP within a feed.

Neutral Detergent Fibre (NDF)

Averages values for NDF are presented here, but again the values range considerably within a feed type. The suggested dietary NDF level for a high-production milker diet is 30–35% of total DM. A dietary NDF level less than 30% is high risk for ruminal acidosis.

Effective fibre value

This refers to the ability of a feed to stimulate chewing activity and the production of saliva. Each feed is rated high, medium or low. At least 2/3 of the total dietary NDF should be effective NDF.

Sugar

Microbes in the rumen rapidly ferment sugars. If animals rapidly consume excessive amounts of sugar rapidly, this may lead to ruminal acidosis, especially if starch intakes are also high. The sugar levels in some feeds can surprise you.

Starch

Microbes in the rumen also rapidly ferment starches.

How does the feed you are looking to buy stack up in terms of value for money?

Nutrient values for a range of common feeds

Table 1 lists typical feed values for different feeds – including a number of high-fibre co-products.

The values here are averages. Ranges have been included in brackets for DM, ME and CP levels.

Hays, silages and co-products are particularly variable; they should always be bought based on a feed lab analysis of a representative sample.



Table 1 Nutrient values for a range of typical feeds

Feed ingredient	Typical composition (mean with range of values in brackets)						
	Dry matter (DM) (%)	Metabolisable energy (ME) (MJ/kg DM)	Crude protein (CP) (% of DM)	Neutral Detergent Fibre (NDF) (% of DM)	Effective fibre value (Subjective score L/M/H)	Sugar (% of DM)	Starch (% of DM)
Grains and concentrates							
Barley	90	12.9 (11.4–13.4)	13.5 (6.9–21.0)	20.0	Low	2.1	54.6
Canola meal	90	11.5	42	32	Low	13.3	2.1
Corn gluten feed	90	12.5	26	47.5	Low	5.0	16.3
Corn gluten meal	90	13.0	65	13.0	Low	8.5	15.5
Cotton seed meal	91	12.5	47	26	Low	8.0	1.5
Linseed meal	91	11.0	35	32	Low	6.4	3.8
Lupins	92	14.3 (13.1–14.9)	31.3 (25.4–40.9)	24	Low	7.7	3.7
Maize (grain)	90	13.5	9.5	11.5	Medium	2.9	70.5
Molasses (cane)	75	12.5	5.5	0.1	Low	55	0.5
Oats	90	12.1 (10.4–15.2)	11.6 (6.5–16.4)	36	Low	3.0	44.3
Sorghum (grain)	90	11.5	10.5	13.5	Low	3.5	64.5
Soy bean meal	90	13.1	49.5	12.4	Low	11.8	2.0
Soy beans (full fat)	92	14.2	41.3	15	Low	11.0	4.4
Sunflower meal	91	10	32	40	Low	6.6	1.2
Tallow	99	34	0	0	Low	0	0
Triticale	90	13.4 (12.7–15.7)	13.1 (7.9–19.4)	15	Low	8.2	60.6
Vegetable oil	99	36	0	0	Low	0	0
Wheat (inc. red wheat)	90	13.5 (10.9–14.7)	12.0 (9.9–26.4)	12.3	Low	6.0	62.7
Wheat pollard	88	11.0	17.6	36	Low	6.1	26.5
Hays and silage							
Hay – canola	85	9.8 (4.1–13.1)	15.9 (4.0–27.2)	41.3	High		
Hay – cereal	90	10.1 (4.3–12.9)	9.2 (1.8–22.1)	51.8	High	11.0	5.0
Hay – grass	90	9.1 (5.6–12.4)	9.1 (2.0–18.9)	61.3	High	7.8	2.4
Hay – legume	90	10.2 (5.9–13.2)	19.1 (6.3–30.1)	41.3	High	7.3	2.1
Hay – lucerne	88	10.1 (6.2–12.1)	20.8 (11.1–30.1)	41.0	High	6.5	2.9
Hay – vetch	90	10.4 (6.0–12.6)	18.6 (8.5–24.5)	42.1	High		
Silage – canola	49	9.9 (6.8–12.4)	17.7 (7.3–28.4)	42.5	High		
Silage – cereal	48	10.3 (5.3–12.5)	12.7 (3.7–23.2)	53.4	High	5.5	6.0
Silage – grass	42	11.0 (7.4–12.5)	16.7 (5.6–25.4)	49.5	High	5.6	2.2
Silage – legume	51	10.3 (6.4–12.0)	19.5 (6.9–28.8)	40.3	High	3.9	2.2
Silage – lucerne	50	9.5	2.2	39	High	4.0	2.0
Silage – maize	35	10.5	8.0	45	High	1.6	30.6

Feed ingredient	Typical composition (mean with range of values in brackets)						
	Dry matter (DM) (%)	Metabolisable energy (ME) (MJ/kg DM)	Crude protein (CP) (% of DM)	Neutral Detergent Fibre (NDF) (% of DM)	Effective fibre value (Subjective score L/M/H)	Sugar (% of DM)	Starch (% of DM)
High-fibre co-products (including straws)							
Almond hulls	90 (88-92)	10 (8.5-10.5)	5 (4-6)	35 (30-45)	Low	33.8	1.0
Barley straw	90 (88-92)	6.5 (2.2-8.5)	2.8 (0.2-28.8)	7 (54.7-87.3)	High	1.8	1.4
Brewers grains (dry)	90	11.5	25.5	50.0	Medium	4.0	5.0
Brewers grains (wet)	22	10.0	22.0	45.0	Medium	5.2	5.1
Citrus pulp (wet)	20 (17-12)	12.5	7.5	23.0	Low	17.0	17.0
Copra meal	90	12.0	20.0	52	Low		
Distillers grains (dried)	92	13.6	26.9	29	Low	7.9	6.0
Distillers grains (wet)	27 (14.2-40.4)	13.6	29.7 (16.7-42.7)	29 (17.9-39.2)	Low	7.9	6.0
Grape marc – raw	55 (19.6-93.9)	6.5 (2.3-12.1)	12.2 (5.4-18.5)	48 (20.3-60.6)	Low		
Grape marc – pressed	50	10	13	33	Low		
Hominy (corn)	89	15.4	13.1	23	Low	3.4	54.0
Millet hay	80	8.5 (5.5-10.6)	8.7 (2.5-23.3)	66 (48.3-80.1)	High	7.4	2.6
Millet silage	41	9.7 (8.5-11.6)	14.4 (5.9-26.6)	58 (44.0-65.0)	High	4.3	2.6
Millrun (wheat)	90	11.3	16.4	36.7	Low		
Oat hulls	92 (88.7-94.3)	4.9	6.2 (3.5-8.9)	70 (57.2-81.9)	Low	2.3	10.5
Oat straw	89	6.2 (4.3-10.0)	2.8 (0.1-11.9)	73 (54.5-78.8)	High	1.8	1.5
Palm kernel meal (PKE) meal	94 (91.5-96.2)	11.1 (9.3-12.4)	15.7 (14.8-16.3)	65 (55.4-74.2)	Low	3.5	1.2
Peanut shells	90 (87.2-92.0)	1.6 (1.1-2.1)	5.8 (4.7-6.8)	43 (29.1-70.8)	Medium		
Rice bran	91 (88.6-92.6)	11.8	14.6 (10.9-18.4)	29 (17.8-40.6)	Low	7.3	19.0
Rice hulls	93	2.5	3.0	85	Low	1.5	1.5
Rice pollard	90	13	13	24-28	Low	9.5	19.4
Rice straw	85 (52.2-93.5)	6.7 (5.3-8.9)	4.0 (1.9-5.0)	63 (53.4-68.5)	High		
Sugar cane bagasse (dry)	93	5.0	2.7 (1.7-3.6)	80 (67.1-92.3)	Low		
Tapioca	88	13.0	3.1	18.2	Low	0.8	73.3
Triticale straw	90 (62.7-95.7)	6.2 (4.1-9.0)	2.8 (0.7-6.7)	67 (50.1-86.5)	High		
Wheat bran	90 (88.3-91.0)	11.0	17.4 (15.6-19.3)	41 (32.8-49.2)	Low	8.3	22.5
Wheat straw	92 (64.7-96.7)	5.1 (3.8-9.3)	2.8 (0.2-8.8)	73 (53.6-86.2)	High	1.8	1.5
Whole cotton seed	94 (92.5-96.4)	13.3 (11.4-15.1)	23 (15.4-28.3)	55 (42.8-72.1)	Medium	4.6	1.1

For a more comprehensive list of high-fibre co-products, refer to the fact sheet *A to Z of fibre sources*.

The typical nutrient composition of ingredients has been compiled from several databases including:

- The Dairy One laboratory database from US (dairyone.com).
- The averages and range of analyses reported by Feed test laboratory for 2006/07 season (feedtest.com.au).
- The Ration Check feed library owned by NSW Department of Primary Industries (dpi.nsw.gov.au).

For more information

To find out more about visit dairyaustralia.com.au

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