

Concentrate feedstuffs for beef cattle

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Summary

- Energy is the most important nutrient in concentrate feedstuffs.
- Buy concentrate mixes on the basis of energy density, not protein and price.
- Always check the label of the concentrate mix being purchased.

Energy is the most deficient nutrient in cattle feeding systems. Energy drives milk production, live weight gain and foetal growth. Therefore, when choosing a concentrate mix, the ingredient mix and the energy density of the mix of ingredients are most important. Energy can be expressed in one of two ways, depending on the class of animal being fed. For suckler cows and growing animals the UFL value is used. For finishing animals including bulls, steers and heifers the UFV value is used.

Protein is a key nutrient for milk production, reproduction and growth. But the protein demand of beef cattle is low. Therefore, less emphasis needs to be put on level and quality of protein in concentrate mixes, unless low protein feeds are being used. Protein is commonly expressed as crude protein %. Protein quality can be further defined by PDI values.

Table 1 — Energy and protein content of concentrate feedstuffs (per kg as fed)

	Energy		Protein		
	UFL	UFV	Crude protein %	PDIN g	PDIE g
Energy feeds					
Barley	1.00	1.00	10.4	64	89
Wheat	1.00	1.00	10.3	67	92
Maize	1.05	1.04	8.4	71	103
Oats	0.89	0.85	9.6	65	73
Citrus pulp	1.01	0.92	6	40	80
Beet pulp, unmolassed	1.01	0.93	9.1	56	97
Soya hulls	0.91	0.87	11.0	68	94
Molasses, cane	0.76	0.76	4.5	24	50
Protein feeds					
Soyabean meal	1.02	1.02	48	342	232
Maize distillers grains	1.03	1.00	25.7	178	119
Maize gluten feed	0.92	0.86	19.8	137	108
Rapeseed meal	0.91	0.85	33.9	219	130
Urea	0	0	273	1398	0
Sunflower meal	0.59	0.50	25	159	89
Palm kernal meal, exp.	0.86	0.84	15	117	127
Wheatfeed (pollard)	0.70	0.64	15.3	101	79

Buying concentrate mixes

There is significant variation in the quality of concentrate mixes on the market. It is important to do a little homework before choosing a concentrate mix. A recent Teagasc survey showed that just 55% of people could identify a high energy ration from the label. Questions that need to be asked to understand the label:

1. What is the energy density of the mix? There is no requirement to print the energy density on the label / docket. However this information should be available, if requested. Always ask for the energy content of the mix. Target energy (UFL) for young stock and autumn calving cows is 0.93-0.94 UFL / kg as fed. Target energy density for finishing bulls, steers and heifers is 0.93-0.94 UFV / as fed. Be careful how the energy is expressed. Energy can be expressed a number of ways, as Table 2 demonstrates with a number of examples.

Table 2 — Energy content of concentrate feedstuffs (per kg as fed)

Method of expression	UFL	UFL	UFL	UFV	UFV	UFV
With minerals / kg as fed	0.88	0.92	0.96	0.88	0.92	0.96
With minerals / kg DM	1.01	1.06	1.10	1.01	1.06	1.10
Without minerals / kg as fed	0.90	0.94	0.98	0.90	0.94	0.98
Without minerals / kg DM	1.03	1.08	1.12	1.03	1.08	1.12

*Assumes a dry matter of 87% and a mineral inclusion of 2.5%

For example, if the energy content of the ration is expressed by the supplier as 1.03 UFV / kg DM without minerals, that is the equivalent of 0.88 / kg as fed, which is lower than the target of 0.93-0.94 UFV / kg as fed for finishing animals.

2. What are the ingredients in descending order? The ingredients on the label will always be expressed in descending order i.e. the ingredient at the top of the list is included at the highest rate, while the ingredient at the bottom of the list is included at the lowest rate. Don't assume that because the first ingredient on the list is a high energy ingredient that the following ingredients will also be good. When examining the label of a ration, list all the ingredients on a page, and opposite each ingredient write the UFL or UFV of the ingredient using Table 1 above. It will quickly become clear what is the likely energy density of the mix. If the target is a high energy density ration, avoid low energy feeds such as sunflower meal and wheat feed in the top 5-6 ingredients.
3. What is the crude protein content of the mix? The protein content of the mix must be specified on the label. Too much emphasis is put on protein content. The protein content is of less significance in comparison to the energy content. Don't buy rations solely on the basis of protein – remember that energy is more important.
4. Are there minerals included in the mix? Vitamin and mineral supplementation should be included in rations for beef animals.
5. What is the price of the concentrate mix? Price should not be the sole criterion for picking a mix. When comparing mixes, do so on the basis of comparable energy, protein and mineral values.