

Dairy Animals Feed



Tips for feeding dairy cattle

- ❑ Concentrate must be feed individually according to production requirements.
- ❑ Good quality roughage saves concentrates. Approximately 20 kg of grasses (guinea, napier, etc.) or 6-8 kg legume fodder (cowpea, lucerne) can replace 1 kg of concentrate mixture (0.14-0.16 kg of DCP) in terms of protein content.
- ❑ 1kg straw can replace 4-5 kg of grass on dry matter basis. In this case the deficiency of protein and other nutrients should be compensated by a suitable concentrate mixture.
- ❑ Regularity in feeding should be followed.
- ❑ Concentrate mixture can be fed at or preferably before milking – half in the morning and the other half in the evening – before the two milking. Half the roughage ration can be fed in the forenoon after watering and cleaning the animals. The other half is fed in the evening, after milking and watering.
- ❑ High yielding animals may be fed three times a day (both roughage and concentrate).
- ❑ Increasing the frequency of concentrate feeding will help maintain normal rumen motility and optimum milk fat levels.

Tips for feeding dairy cattle

- ❑ Over-feeding concentrates may result in off feed and indigestion.
- ❑ Abrupt change in the feed should be avoided.
- ❑ Grains should be ground to medium degree of fineness before being fed to cattle.
- ❑ Long and thick-stemmed fodders such as Napier may be chopped and fed.
- ❑ Highly moist and tender grasses may be wilted or mixed with straw before feeding.
- ❑ Legume fodders may be mixed with straw or other grasses to prevent the occurrence of bloat and indigestion.
- ❑ Silage and other feeds, which may impart flavour to milk, may be fed after milking.
- ❑ Concentrate mixture in the form of mash may be moistened with water and fed immediately. Pellets can be fed as such.
- ❑ All feeds must be stored properly in well-ventilated and dry places. Mouldy or otherwise damaged feed should not be fed.
- ❑ For high yielding animals, the optimum concentrate:roughage ratio on dry matter basis should be 60:40.

Tips for feeding dairy cattle

- energy requirements change according to cow size, activity, stage of pregnancy, weight gain or loss and level of milk production
- protein requirements vary with stage of lactation
- microbial protein can sustain production of up to 12 L/d. Up to this level of production, all protein in the diet can be Rumen Degradable Protein (RDP). Beyond this, Undegradable Dietary Protein (UDP) requirements rise as production increases
- good quality forage contains both rumen degradable protein and undegradable protein – cows fed good quality forage and producing up to 30 L/d are unlikely to need supplementary undegradable dietary protein
- the absolute minimum amount of fibre is 30% Neutral Detergent Fibre (NDF) or 17% Crude Fibre (CF).

- Lactating Cows require 60-70 lit of water per day for maintenance purpose.
- Extra 4-5 lit for per litre of Milk Produced
- Water requirements rise with increase in air temperature, as increase of 4 degrees will increase water requirements by 6-7 lit/day
- High yielding cows can drink 150-170 lit of water during Hot/Humid condition

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Table 6.1 Energy requirements for maintenance

Metabolisable Energy (ME); Total Digestible Nutrients (TDN). (Source: Ministry of Agriculture

Live weight (kg)	Daily energy requirements	
	ME (MJ/d)	TDN (kg/d)
100	17	1.2
150	22	1.5
200	27	1.9
250	31	2.2
300	36	2.5
350	40	2.8
400	45	3.1
450	49	3.4
500	54	3.8
550	59	4.1
600	63	4.4

Table 6.7 Crude protein needs of a cow at different stages of lactation

(Source: Target 10 1999)

Milk production	Crude protein requirements (%)
Early lactation	16-18
Mid-lactation	14-16
Late lactation	12-14
Dry	10-12

(source: target 10 1999)

Fibre measurement	Minimum amount of dietary fibre (% DM)
Neutral Detergent Fibre	30
Acid Detergent Fibre	19
Crude Fibre	17

Table 6.2 Average daily energy requirements in the last four months of pregnancy

Metabolisable Energy (ME); Total Digestible Nutrients (TDN). (Source: Ministry of Agriculture, Fisheries & Aquaculture)

Month of pregnancy	Daily additional energy required	
	ME (MJ/d)	TDN (kg/d)
Sixth	8	0.6
Seventh	10	0.7
Eighth	15	1.1
Ninth	20	1.4

Feeding schedule of growing animals from 6 months onwards

Age (months)	Approximate body weight (kg)	Concentrate mixture (kg)	Grass (kg)
6-9	70-100	1.5-1.75	5-10
9-15	100-150	1.75-2.25	10-15
15-20	150-200	2.25-2.50	15-20
Above 20	200-300	2.50-2.75	15-20

Feeding schedules for dairy animals (Quantity in kg.)

S. No.	Type of animal	Feeding during	Green Fodder	Dry Fodder	Concentrate
(A) CROSS BREED COW					
1.	6 to 7 liters milk per day	Lactation days	20 to 25	5 to 6	3.0 to 3.5
		Dry days	15 to 20	6 to 7	0.5 to 1.0
2.	8 to 10 liters milk per day	Lactation days	25 to 30	4 to 5	4.0 to 4.5
		Dry days	20 to 25	6 to 7	0.5 to 1.0

Feeding schedule for different classes of adult cows (approximate body weight-250 kg)

When green grass is plenty

When paddy straw is the major roughage

Category	Concentrate mixture (Kg)	Green Grass (kg)	Concentrate Mixture (kg)	Green Grass (kg)	Paddy Straw (kg)
Dry cows	-	25 – 30	1.25	5.0	5 – 6
Milking	1 kg for every 2.5 - 3.0 kg of milk	30	1.25 + 1 kg for every 2.5 - 3.0 kg of milk	5.0	5 – 6
Pregnant	Production Allowance + 1 to 1.5 kg from 6th month of pregnancy	25 - 30	Maintenance + production + 1 to 1.5 kg from 6th month of pregnancy	5.0	5 - 6

Nutrient requirements for milk producing buffaloes

Requirements for Live weight	Energy (ME in MCAL)	total digestible nutrients (kg)	Total Crude Protein (g)	Calcium	Phosphorus (g)
450 kg	13.0	3.4	341	18	13
500 kg	14.2	3.7	364	20	14
550 kg	15.3	4.0	386	22	16
600 kg	16.3	4.2	406	24	17
Requirements for Milk yield per kg 4% fat corrected milk	1.24	0.32	90	2.73	1.68

Feeding Schedule for different breeds of Buffaloes (Kg)

Type of animal	Feeding during	Green Fodder	Dry Fodder	Concentrate
Murrah (7 to 8 liter milk per day)	Lactation days Dry days	25 to 30 20 to 25	4 to 5 5 to 6	3.5 to 4.0 0.5 to 1.0
Mehasana (6 to 7 liter milk per day)	Lactation days Dry days	15 to 20 10 to 15	4 to 5 5 to 6	3.0 to 3.5 0.5 to 1.0
Surti (5 to 6 liter milk per day)	Lactation days Dry days	10 to 15 5 to 10	4 to 5 5 to 6	2.5 to 3.0 0.5 to 1.0

Recommended concentrate mixtures (Approx. 15% DCP about 70% TDN)

S. No	Ingredients	Parts(Kg)	S. No	Ingredients	Parts(Kg)
1.	Groundnut cake	32	4	Gingelly cake	20
	Gingelly oil cake	5		Coconut cake	15
	Rice bran	25		Yellow maize	32
	Dried tapioca chips	35		Wheat bran	30
	Mineral mixture	2		Mineral mixture	2
	Salt	1		Salt	1
2.	Coconut cake or cotton	30	5.	Sunflower cake(decorticated)	25
	seed cake	10		Cotton seed cake(decorticated)	15
	Rice bran	30		Jowar	25
	Yellow maize	27		Wheat bran	32
	Mineral mixture	2		Mineral mixture	2
	Salt	1		Salt	1
3.	Groundnut cake	33	6.	Groundnut cake	20
	Rice bran	30		Rubber seed cake	20
	Tamarind seed(decorticated)	10		Yellow maize	27
	Dried tapioca chips	24		Wheat bran	15
	Mineral mixture	2		Tapioca starch waste	15
				Mineral mixture 2	2

References:

1. <http://bieap.gov.in/DairyAnimalManagementTheory.pdf>
2. *www.milkproduction.com*
3. *www.vuatkerala.org*