

Feeding Milk Replacer to Calves

Example for Milk Replacer 1			Example for Milk Replacer 2		
S. No.	Feed ingredients	%	S.No.	Feed ingredients	%
1	Dried skim milk	50	1	Wheat	10
2	Dried whey	30	2	Soybean meal	12
3	Dextrose	8	3	Linseed meal	40
4	Oat flour	5	4	Milk	13
5	Brewers yeast	5	5	Cottonseed oil/ coconut oil	7
6	Yeast	0.26	6	Citric acid	1.5
7	Trace minerals	0.04	7	Molasses	10
8	Vitamin A supplement	1.7	8	Mineral mixture	3
			9	Linseed oil	3
			10	Butyric acid	0.3
			11	Antibiotic mixture	0.3
				Rovimix (A, B2, D3)	0.015

Rate of Replacing Milk Replacer

Days	Bodyweight (Kg)	Colostrum (Kg)	Milk	Milk replacer (g)
1-5	-	1/10 of body wt	-	-
6-9	-	-	1/10 of body wt	-
10-13	-	-	1/10 of body wt	50
14-17	-	-	1/10 of body wt	100
18-21	-	-	Less by ½ kg	175
22-25	-	-	Less by 1 kg	250
26-29	-	-	Less by 1.5 kg	325
30-33	35	-	Less by 2 kg	375
34-36	40	-	Less by 2.5 kg	450
-	40	-	1.5 kg	450
-	45	-	1.5 kg	525
-	50	-	1.5 kg	600
-	55	-	1 kg	800
-	60	-	1 kg	900
-	65	-	1 kg	950
-	70	-	1 kg	1000

Feeding of Growing Heifer Calves (Post Ruminants)



Nutrient Requirements for Growing FEMALE Calves

Body weight (kg)	Weight gain (kg/d)	DM (kg)	TDN (kg)	CP (g)	Total MP (g)	RDP (g)	RUP * (g)
70	0.2	1.6	1.04	263	122	191	71 (37)
70	0.3	1.8	1.16	335	151	235	100(58)
70	0.4	1.8	1.28	406	178	278	127(78)
100	0.2	2.9	1.33	288	141	220	68 (30)
100	0.3	2.9	1.46	357	168	262	94 (48)
100	0.4	3.0	1.61	423	195	304	119(65)
100	0.5	3.1	1.75	487	221	345	142(81)
100	0.6	3.1	1.90	549	246	385	164(96)
200	0.3	4.8	2.34	419	219	341	78 (18)
200	0.4	5.2	2.54	473	243	380	93 (26)
200	0.5	5.6	2.74	525	267	418	108(34)
200	0.6	5.6	2.95	575	291	454	121(41)
200	0.7	5.4	3.16	623	314	490	133(46)
200	0.8	5.4	3.37	669	336	525	144(51)

*Values in the parenthesis are indispensable requirements of RUP, otherwise growth rate will decrease (ICAR, 2013)

Nutrient Requirements for Growing FEMALE Calves

Body weight (kg)	Weight gain (kg/d)	DM (kg)	TDN (kg)	CP (g)	Total MP (g)	RDP (g)	RUP * (g)
300	0.3	6.6	3.11	485	264	412	73
300	0.4	6.9	3.36	528	287	448	79
300	0.5	7.2	3.61	569	310	484	85
300	0.6	7.2	3.87	610	332	518	91
300	0.7	7.2	4.13	649	353	552	97
300	0.8	7.5	4.40	688	374	585	103
300	0.9	7.5	4.67	725	395	617	109
400	0.4	8.8	4.11	605	329	514	91
400	0.5	8.8	4.41	645	351	548	97
400	0.6	8.4	4.72	684	372	581	103
400	0.7	8.8	5.03	722	393	613	108
400	0.8	9.2	5.34	759	413	645	114
400	0.9	9.2	5.66	795	432	675	119
400	1.0	9.6	5.98	830	451	705	124
500	0.4	10.5	4.81	681	371	579	102
500	0.5	10.5	5.16	721	392	612	108
500	0.6	10.5	5.51	759	413	645	114
500	0.7	11.0	5.87	796	433	677	119
500	0.8	11.0	6.23	832	453	708	125
500	0.9	11.5	6.60	868	472	738	130
500	1.0	11.5	6.97	902	491	767	135

*Values in the parenthesis are indispensable requirements of RUP, otherwise growth rate will decrease (ICAR, 2013)

Nutrient Requirements For Growing MALE Calves

Body weight (kg)	Weight gain (kg/d)	DM (kg)	TDN (kg)	CP (g)	Total MP (g)	RDP (g)	RUP * (g)
70	0.2	1.6	1.14	287	134	210	78 (41)
70	0.3	1.8	1.25	378	168	262	116 (70)
70	0.4	1.8	1.36	467	201	314	153 (97)
100	0.2	2.6	1.46	309	152	237	71 (29)
100	0.3	2.7	1.58	395	185	289	107 (56)
100	0.4	2.8	1.70	480	217	339	141 (81)
100	0.5	3.0	1.83	562	248	388	174(105)
100	0.6	3.1	1.96	641	279	436	205(128)
100	0.7	3.2	2.08	718	309	483	235(150)
200	0.3	4.6	2.54	446	234	366	80 (16)
200	0.4	5.0	2.70	518	264	412	106 (33)
200	0.5	5.2	2.87	588	293	457	131 (50)
200	0.6	5.2	3.05	655	321	501	154 (66)
200	0.7	5.4	3.22	721	348	544	176 (80)
200	0.8	5.6	3.40	783	375	586	197 (94)
300	0.3	6.3	3.38	512	278	435	77
300	0.4	6.6	3.58	563	306	478	84
300	0.5	6.9	3.79	617	333	521	96 (4)
300	0.6	6.9	4.00	675	360	562	113 (13)
300	0.7	7.5	4.22	731	386	603	128 (22)
300	0.8	7.5	4.44	784	411	642	142 (29)
300	0.9	7.8	4.66	836	435	680	156 (36)
400	0.4	8.8	4.39	639	347	543	96
400	0.5	8.8	4.63	687	373	584	103
400	0.6	9.2	4.88	733	399	623	110
400	0.7	9.2	5.14	779	424	662	117
400	0.8	9.2	5.39	823	448	700	123
400	0.9	9.2	5.65	866	471	736	130
400	1.0	9.6	5.91	908	494	772	136
500	0.4	10.5	5.14	715	389	607	107
500	0.5	10.5	5.42	762	414	647	114
500	0.6	11.0	5.71	808	439	686	121
500	0.7	11.0	6.00	852	464	724	128
500	0.8	11.0	6.29	896	487	762	134
500	0.9	11.0	6.58	938	510	798	141
500	1.0	11.0	6.88	980	533	833	147

*Values in the parenthesis are indispensable requirements of RUP, otherwise growth rate will decrease (ICAR, 2013)



RATION FOR 3-6 MONTHS OF AGE

Category	Concentrate (Kg)	Roughage (Kg)
Indigenous cattle/ buffaloes	0.5 - 1.5 kg	Green fodder: 5-10 kg up to 4 months and 10-15 kg from 4-6 months (70 % non legume fodder and 30 % Legume fodder) Dry fodder Paddy straw: 2-3 kg
Cross breeds	0.75 - 2.0 kg	



RATION FOR 7-12 MONTHS OF AGE

Category	Concentrate (Kg)	Roughage (Kg)
Indigenous cattle/buffaloes	1- 2 Kg	Grass/Cereal fodder: 10 - 15 kg Desmanthus: 3-5 kg Paddy straw: 2-3 kg
Cross bred	2.0 – 2.5 Kg	Grass/Cereal fodder: 15 - 20 kg Desmanthus: 5-6 kg Paddy straw: 3-5 kg



Assuming a Daily Body Weight Gain of 0.45 Kg:

- ▶ 2 kg concentrate mixture (16 % DCP and 70 % TDN) and 15-20 kg of green fodder should be given
- ▶ If leguminous fodder are available in plenty and fed to appropriate the amount of concentrate mixture can be reduced to 1 kg per day
- ▶ A growth rate of 0.4 kg per day is quiet satisfactory for Indian breeds and 0.5 kg/day for exotic breed

CALF GROWER MEAL REQUIREMENTS

S.No.	NUTRIENTS	REQUIREMENT
1	MOISTURE (Max.)	10
2	CRUDE FIBRE	10
3	CRUDE PROTEIN	22-25
4	CRUDE FAT	4
5	TOTAL ASH	5
6	ACID INSOLUBLE ASH (Max.)	3.5

EXAMPLE FOR CALF GROWER MEAL

S.No.	FEED INGREDIENS	%
1	MAIZE	22
2	WHEAT BRAN	25
3	GROUND NUT OIL CAKE	30
4	LEUCERNE MEAL	20
5	MINERAL MIXTURE	2
6	COMMON SALT	1
	Total	100

Ration for one year to age at Conception

Category	Concentrate (kg)	Roughage (kg)
Indigenous cattle/ buffaloes	1.5-2 Kg	15-20 kg of grasses/ cereal grasses + 2-4 kg Desmanthus + 2-3 kg paddy straw
Cross bred	1.5 – 2.5 Kg	20-30 kg of grasses/ cereal grasses + 3-5 kg Desmanthus + 3-5 kg paddy straw

Example for Formulated Feed with Nutrient Requirements for Heifer Calves Weighing 200 Kg Body Weight with a Daily Growth Rate Of 0.5 Kg

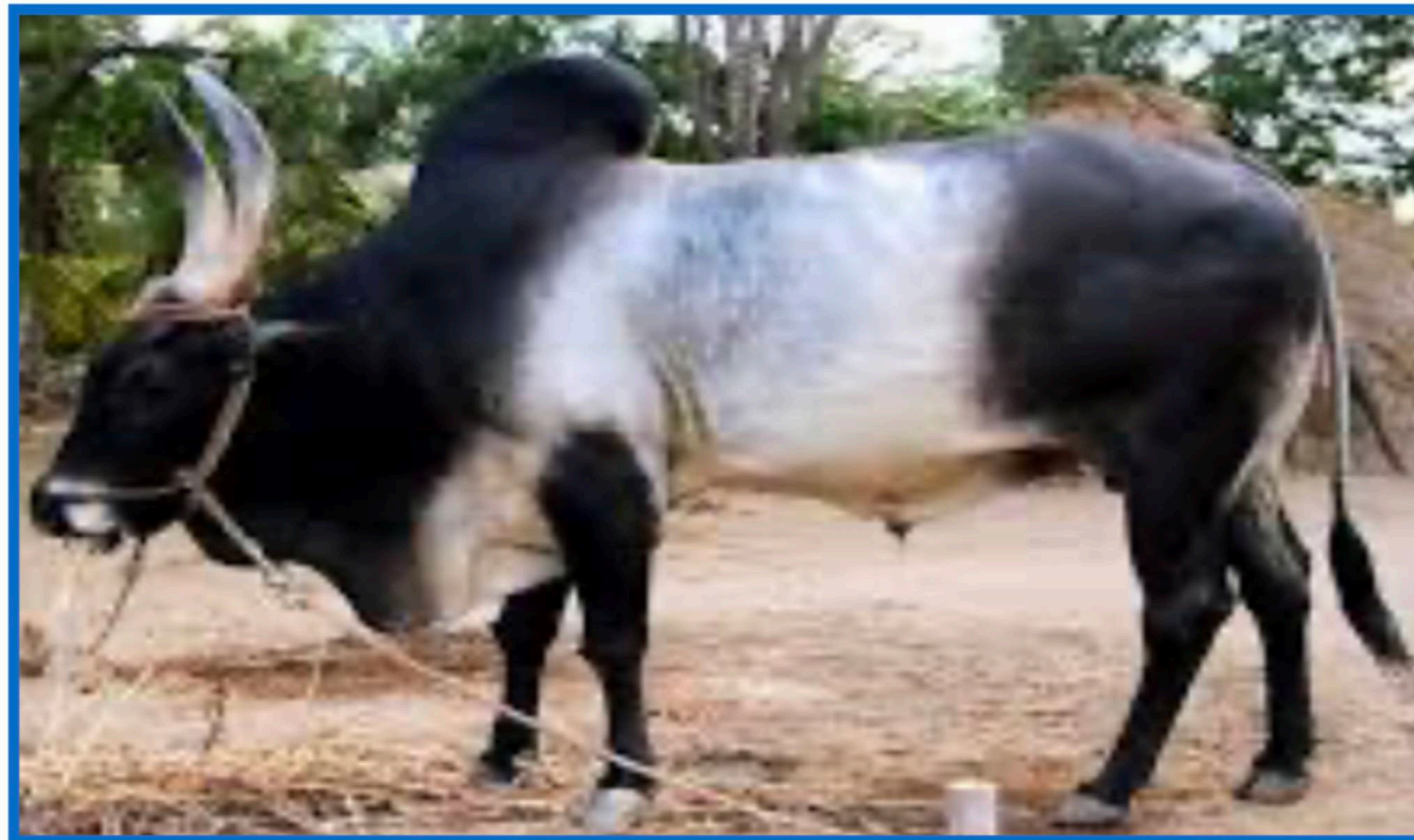
Requirement and feed	Quantity (kg)	DM (kg)	CP (kg)	TDN (kg)
Requirement		5.2	0.59	2.87
Paddy straw	1.2	1.08	0.032	0.454
CO4/CO5 grass	10	2.50	0.195	1.500
Concentrate mixture	2	1.80	0.360	1.300
		5.38	0.587	3.254

Composition of concentrate mixture

Feed ingredients	Quantity in kg
Maize	22
Jowar	20
Groundnut oil cake	15
Tapioca thippi	14
DORB	26
Mineral mixture	2
Salt	1
Total	100

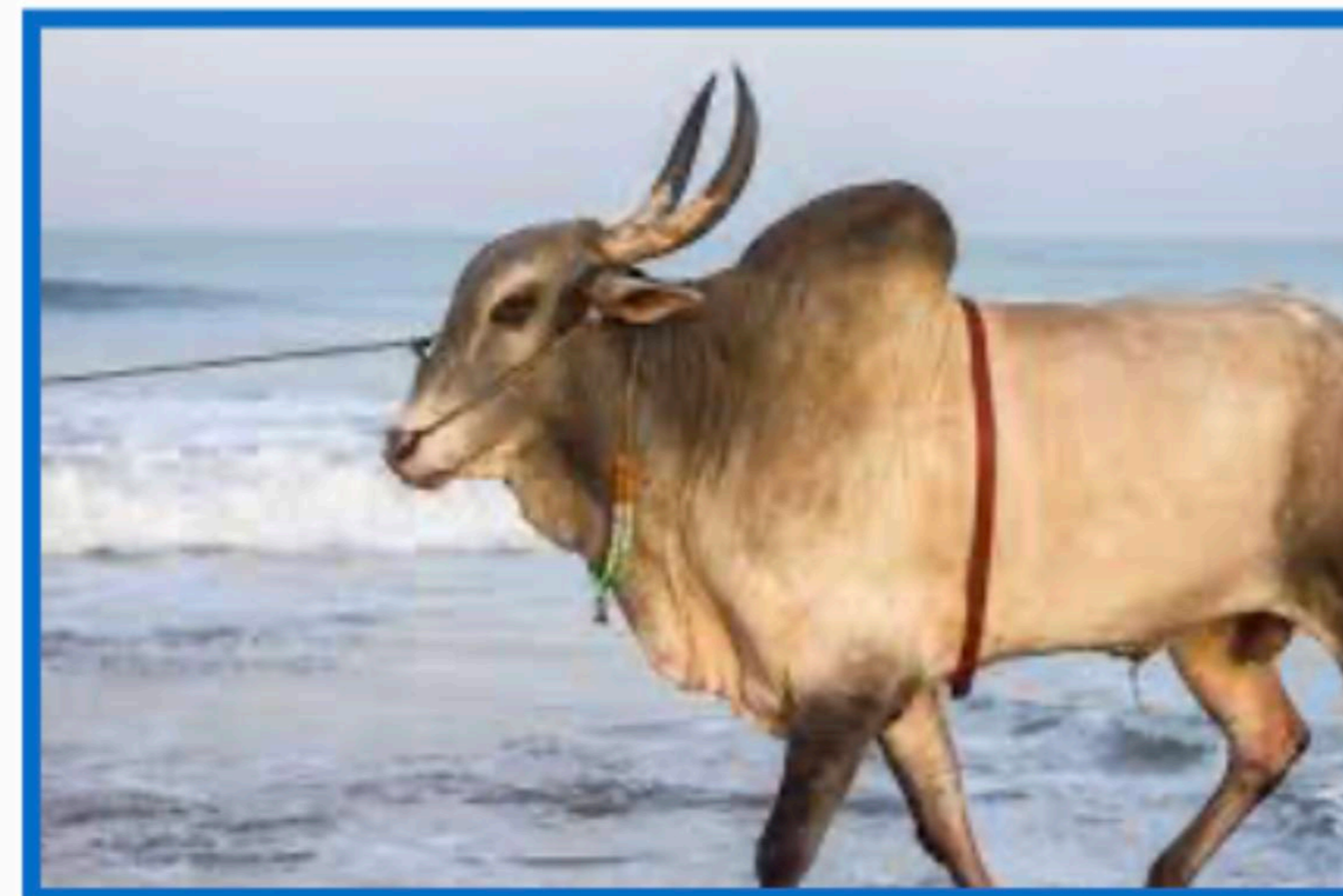
Feeding of Breeding Bulls

- ▶ The feeding of breeding bulls is very important for production of good quality semen to produce elite breed for milk production
- ▶ Formulation of feed
 - (1) Assessment of the nutritive value of feedstuffs,
 - (2) Description of the nutrient requirements of animals,
 - (3) Ration formulation



Feeding of Breeding Bulls

- ▶ Feeding programme starts with young calves which are ear marked to be raised as future breeding males should generally be kept on a **liberal amount of milk**
- ▶ Milk is also supplemented with calf starter from 2 weeks of age onwards along with **good quality succulent fodder/hay.**
- ▶ After six months of age, a bull calf should be given **larger amount of concentrates with good quality succulent fodder**
- ▶ **Bull calves from 1 to 2 years of age:**
 - ⊙ 2 kg concentrate mixture (DCP: 15 % and TDN: 65 %)
 - ⊙ 15 -20 kg green fodder
 - ⊙ 2-4 kg paddy straw



Nutrient Requirement of Breeding Bulls

Body weight (kg)	DM (kg)	TDN (kg)	ME (Mcal)	MP (g)	RDP (g)	RUP (g)	CP (g)
350	6.5	3.46	12.5	214	335	59	394
400	7.6	3.82	13.8	237	370	65	436
450	8.6	4.18	15.1	259	405	71	476
500	9.7	4.52	16.3	280	438	77	515
550	10.8	4.86	17.5	301	470	83	553
600	11.9	5.18	18.7	321	502	89	591
650	13.0	5.50	19.9	341	533	94	627
700	14.0	5.82	21.0	361	563	99	663
750	15.1	6.13	22.1	380	593	105	698
800	6.5	6.43	23.2	399	623	110	733

(ICAR 2013)

► **Feed should include:**

- ⊙ 2.5 to 3.0 kg concentrate mixture (DCP: 15 % and TDN: 65 %)
- ⊙ 20-25 kg green fodder
- ⊙ 3-5 kg paddy straw

Factors to be considered for feeding of Breeding Bulls

- ▶ Breeding bulls should attain body weight of 350-400 kg at the age of 2.5 year
- ▶ Feed good quality green and dry fodders together with concentrates to keep them in thrifty condition as per the requirements.
- ▶ Low protein feeding causes delayed puberty by 5 months and had poor testicular development and small ejaculate volume as compared to their normal counterpart
- ▶ Avoid excess feed leads to deposition of fat reduces the libido
- ▶ Vitamin A and Zn deficiency can also delay puberty, reduce libido and may affect integrity of testicular tissue and hence special care need to be taken to prevent deficiency of these two critical nutrients.
- ▶ Hence all essential nutrients are important for healthy bulls

Conclusion

- ▶ The calf immediately after birth should be fed colostrum within 2 hours
- ▶ Calf starter and good quality succulent roughage will be provided from 21 days onwards
- ▶ Milk replacer has to be given for the economic benefit
- ▶ Balanced feed includes concentrates and roughages should be fed to growing calves as per the requirements for betterment in growth
- ▶ Breeding bulls should be given sufficient nutrients
- ▶ Least cost diet should be prepared by using locally available feed ingredients for the economic benefit of the farmers



Thank you

