

## Feeding practice of calves up to weaning age

Ishmeet Kumar<sup>1\*</sup>, Harsha Sahu<sup>2</sup>, Asad Khan<sup>1</sup>, Jayesh Vyas<sup>1</sup>

<sup>1</sup>PhD Scholar Animal Genetics and Breeding, ICAR-National Dairy Research Institute, Karnal, Haryana

<sup>2</sup>College of Veterinary Science and Animal Husbandry, Anjora, Durg, Chhattisgarh

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Calves are the future of dairy herd. Raising calves is by far the most difficult operation in a dairy farming enterprise. Without proper management and feeding calves mortality can reach up to (15-35%). For maintain efficiency of production, (20-25%) of calves are used to replace with heifer – cows. Sound feeding and management programs for young calves. The majority of the growth of the calves within the dam occurs within the last two months of gestation. Proper nutrition to dam not only ensures good growth of feats but also affects quality and quantity of antibodies of the colostrum.

Feeding of calves can be divided as: -

- 1) Dam's feeding during last trimester of pregnancy.
- 2) Pre- ruminant period after rumen development.
- 3) Post ruminant period – after rumen development.

### 1) Dams feeding during Last trimester of pregnancy

- Extra nutrition should be given during last trimester of gestation
- Dam should be provided with 15-20 Kg green fodder daily to make colostrum rich in vit A.
- If green fodder is not offered then calf should be supplemented with 1000 IU vit. A in its 1<sup>st</sup> feed followed by 1000 IU daily.

### Stemming up

It is a process in which animal is supplemented with extra concentrate to their pregnant animal in the last trimester to avoid any complication during parturition due to protein deficiency and also leads to higher production.

Concentration of selected minerals and vitamins in the total diet recommended for a 1500-Ib Holstein dry cow from 240 to 280 days pregnant.

Mineral	Dry matter basis
Calcium	0.44-0.48%
Phosphorus	0.22-0.26%
Magnesium	0.11-0.62%
Potassium	0.51-0.62%
Copper	12-18 ppm
Zinc	21-30 ppm
Selenium	0.3 ppm
Vit. E	1168-1211 ppm

Nutrition Requirement of Dairy Cattle 2001 (7<sup>th</sup> revised edition)

### 2) Pre- rumination period 0-3 months

Feeding during pre-ruminant stage can be divided into following steps.

- Colostrum feeding
- Whole milk feeding
- Skim milk
- Calf starter
- Milk replacer
- Roughage – Hay



Typical composition of colostrum (First milking after calving) Transition milk (Second and third milking after calving), and whole milk				
Component	Milking after calving			Whole milk
	Colostrum	Transition Milk		
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	
<b>Total solids (%)</b>	23.9	14.1	13.6	12.9
<b>Fat (%)</b>	6.7	3.9	4.4	4.0
<b>Protein (%)</b>	14.0	5.1	4.1	3.1
<b>Lactose (%)</b>	2.7	4.4	4.7	5.0
<b>Calcium (%)</b>	0.26	0.15	0.15	0.13
<b>Immunoglobulin's (%)</b>	6.0	2.4	1.0	0.1
Taken from: Feeding the Newborn Dairy Calf. Special Circular 311. Pennsylvania State University.				

**Colostrum feeding** is the first milk produced by female mammals in the first few days after giving birth. Colostrum is essential for the health and survival of newborn animals, including calves, as it provides them with essential antibodies and nutrients neonate's needs to establish their immune system and grow strong.

- Strength of absorption colostrum decline within 12-23 hours



**Importance of colostrum feeding: -**

- Provides passive immunity
- Laxative effects
- Antitrypsin action
- Excellent source of vit A, D, and E
- Contains antibacterial substances- Lactoferrin Lactoperoxidase and Lysozyme.

**Method of feeding colostrum**

- Natural (Suckling)
- Artificial
  - (i) Bottle feeding
  - (ii) Bucket feeding
  - (iii) Esophageal tube feeding

**Important points regarding colostrum feeding**

- Quality of the colostrum can be determined by Chlorometer (Superior quality colostrum contains greater than 50 mg/ml of immunoglobulin’s)
- Three-to-five-gallon containers of quality colostrum can be stored in a non-frost freezer for up to one year for feeding to calving from another dam who enable to feed.
- Cow’s colostrum can be feed to buffalo calves.
- Fermented colostrum can also be feed to neonatal.

**Practical feeding schedule: -**

Age	Whole milk	Calf starter	Hay
1-3 day	Colostrum @ 1/10th B.W. in 3 feeds	-	-
4-7 day	Milk @ 1/10th B.W. in 3 feeds	-	-
8-14 day	Milk @ 1/10th B.W.	-	-



15-21 day	Milk @1/10th B.W.	A little	A little
22-35 day	Milk @1/15th B.W.	100 g	Ad lib
Up to 2 months	Milk @1/20th B.W.	250 g	Ad lib
2-3 months	Milk is gradually reduced & tapered	500 g	Ad lib

**Feeding Schedule of Buffalo Calves (0-3 months):**

**WHOLE MILK+ SKIM MILK+ CALF STARTER**

Age (Days)	Calf Starter in grams	Colostrum	Milk	Skim milk
0-5	-	1/10 <sup>th</sup> B.wt	-	-
6-15	-	-	1/10 <sup>th</sup> B.wt	-
16-30	-	-	1/10 <sup>th</sup> B.wt	-
31-60	125	-	1/15 <sup>th</sup> B.wt	1/15 <sup>th</sup> B.wt
61-90	250	-	1/20 <sup>th</sup> B.wt	1/15 <sup>th</sup> B.wt

**Milk replacer importance: -**

- Is used to reduce economic loss.
- Made from the byproducts of the dairy industry.
- Whey is usually much cheaper than other milk proteins such as casein and skim milk.
- It is nutritiously adequate.
- We can supplement sufficient energy, high quality protein minerals and vitamins.
- Contain 10-20% fat and 22% minimum total protein.

**Content milk replacer: -**

Wheat flour, fish meal, linseed meal, coconut oil, linseed oil, butyric acid, citric acid,



molasses, mineral mixture, mineral mixture, milk.

### Calf starter: -

It is a solid feed consisting of ground grain, oil cake, animal protein supplements and brans fortified with vitamins, minerals and antibiotic feed supplements.

**Note:** -Should have 18% DCP or 23-26% CP and 75% TDN

Have low in fiber content less than 7% because low level of fibrous material benefit starter intake and calf growth.

S/NO.	Ingredients	Percentage
1	Crushed barley/ maize	50
2	Ground nuts cake	30
3	Wheat bran	8
4	Fish meal/ meat meal	10
5	Mineral mix	2
6	Vit. D supplement	10 g
7	Salt	0.5

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