

# Calf Nutrition

Today's calf is tomorrow's dairy animal



Calves born on the same day

**Good dairy herds are raised, not bought**



**National Dairy Development Board  
Anand**

## Introduction

The upkeep and proper management of young calves are a prerequisite to the success of any dairy development programme. An optimum level of nutrition in early life favours faster growth and earlier onset of puberty. Calves should be reared carefully to obtain optimum gain in body weight, so that they attain about 70-75 per cent of mature body weight at puberty. Poor feeding of young calves leads to higher age at first calving and overall loss of productivity in the life span. Therefore, milk producers need to recognise the implications of poor feeding of young calves.

## Importance of colostrum feeding to newly born calves

Colostrum is the first secretion produced by the mammary gland of cows/buffaloes after calving, a rich source of protein, fat, minerals and antibodies.

The calf should receive colostrum within 1-2 hours of birth. The gut of the newborn calf is able to absorb maternally-derived immunoglobulins (antibodies) contained in colostrum and transport them into the bloodstream. Antibodies transferred from the dam to the calf in this way are referred to as "passive" antibodies. The ability of the calf to absorb these colostrum antibodies is maximum within the first hour following birth and remains fairly good for up to six hours. After this, there is a progressive loss in the calf's ability to absorb colostrum antibodies. On an average, the calf should receive 3-4 meals of colostrum within the first 24 hours of its life.

## Importance of colostrum feeding

- Newly born calves have very low resistance to diseases. Buffalo calves have an even lesser resistance to diseases as transfer of antibodies from the dam to calf through the placenta is very low.
- Colostrum is an invaluable gift of nature to newly born calves. Compared to whole milk it contains 4-5 times protein, 10 times vitamin A and plenty of minerals.
- Colostrum acts as a mild laxative as it helps removing digestive residue, meconium, from the intestines of newly born calves.

## Milk replacer

Young calves need to be fed two litres of milk daily, at least for a period of two months, which should slowly be replaced with a good quality calf starter. Milk producers prefer to sell this milk to meet their day-to-day needs, rather than feeding it to the calf. Consequently, calves are starved of milk, which severely affects their growth and age at maturity. This reduces productive life of dairy animals.

Milk replacer could be an economical alternative to milk for feeding young calves, comprising skim milk powder, soybean meal, groundnut meal, edible oils, grains, vitamins, mineral mixture, preservatives etc. Cost of reconstituted milk from the milk replacer is about one third the cost of whole milk. Reconstituted milk replacer has almost all the essential nutrients, similar to milk. If a calf is fed two litres of reconstituted milk in place of whole milk, a farmer can save substantial amount of money per calf per day. On feeding milk replacer, followed by feeding calf starter, age at maturity could be reduced by up to 12 months.

<b>Ingredients of milk replacer</b>	
Ingredients	Quantity (kg)
Rice polish fine	14
Crushed maize grain	20
Maize gluten	16
Groundnut extraction	15
Soyabean extraction	12
Skimmed milk powder	10
Bypass fat	4
Molasses	6
Mineral mixture	2
Iodised common salt	0.80
Antibiotics	0.10
Vitamins	0.02
Preservatives	0.08

## Feeding schedule of milk replacer

Considering the general economic condition of milk producers, it is suggested that after colostrum feeding, about one litre reconstituted milk should be given with one litre of whole milk. Slowly, whole milk should be withdrawn and the reconstituted milk should be increased to about two litres a day, at one month of age and should be continued up to two months of age.

From the second week onwards, good quality hay and calf starter should also be introduced, which would help in early development of rumen and help achieve desirable growth rate.

## Calf starter and calf growth meal

Calf starter is a balanced concentrate mixture, comprising ground cereal grains, protein supplements, minerals and vitamins. Calves should be encouraged to consume maximum amount of calf starter as that would enhance growth rate. If the hungry calves are fed on straw/hays then the consumption of calf

starter would be less. Feeding calf starter and good quality leguminous hay from early life, stimulates early development of rumen papillae (rumen wall), essential for rumen functions, which favours digestion of larger proportion of fodder at an early age. After about six months, calf starter should be replaced with calf growth meal, which is more economical for growing calves. Requirements for calf starter meal and calf growth meal on Dry Matter (DM) basis, are given below:

<b>Characteristics</b>	<b>Calf starter meal</b>	<b>Calf growth meal</b>
Crude protein (per cent), min.	23	22
Crude fat (per cent), min.	4.0	3.0
Crude fibre (per cent), max.	7.0	10.0
Acid insoluble ash (per cent) max.	2.5	3.5
Iodised common salt (per cent), max.	1.0	1.0
Calcium (per cent), min.	0.5	0.5
Phosphorus (per cent), min.	0.5	0.5
Available phosphorus (per cent), min.	0.2	0.2
Urea (per cent), max.	Nil	Nil
Calcite powder (per cent), max.	1.0	1.0
Vitamin A (International Unit/kg), min.	10,000	10,000
Vitamin D <sub>3</sub> (International Unit/kg), min.	2,000	2,000
Vitamin E (International Unit/kg), min.	150	150
Aflatoxin B <sub>1</sub> (ppb), max.	20	20



Calf starter should not contain any non-protein nitrogen source. It should contain only traditional and highly palatable ingredients such as soybean meal, decorticated cotton seed meal, wheat bran, rice polish, crushed maize etc.

### **Tips for raising healthy calves**

- Just after birth, clean the nostrils and mouth of the calf.
- Massage the chest gently to help the calf breathe comfortably. Clean the entire body of the calf properly.
- Insert two fingers in the mouth and place them on the tongue, which will help the calf to start suckling.
- Newly born calves should be kept in a protected environment.
- Naval cord should be tied with a thread at a distance of 2 inches. Cut the remaining cord with a clean pair of scissors and apply tincture iodine to avoid naval infection.
- Within half an hour of birth, feed colostrum to the calf.
- Whole milk/milk replacer should be given to calves at least up to 2 months.
- De-worming should be done during third week and then at the 3<sup>rd</sup> and 6<sup>th</sup> months of age.
- From 2<sup>nd</sup> week, calves should be fed good quality hay and calf starter.