

# MILK (CALF MILK REPLACER) SCHEDULE (Level 3)

Topic	Training & information Content
6.1	Selection of bulls, use of sexed semen, feeding management of dry cows
6.1.1	The calving process
6.1.2	Use of equipment around calving
6.1.3	Care of cow and calf after calving
6.1.4	Colostrum management
6.2	Milk (replacer) feeding schedule
6.3	From birth to weaning
6.4	Disease and health management
6.5	Handling of calves after difficult birth
6.6	Young stock rearing info and Key Performance Indicators



## 1. You will learn about (learning objectives):

- How to guide the calf throughout the first period of its life.
- Calf Milk Replacer (CMR) versus cow/whole milk



## 2. Background

- Feeding and raising calves can be rather simple, as long as the calf stays with her mother.
- When you decide to raise your calves separate from the mother cow, many other management decisions have to be made.
- For example, choose a rearing schedule with whole milk and/or Calf Milk Replacer (CMR).
- This is a decision that will be based on finances and efficiency.
- All Do's and Don'ts for a successful 'milk period' must be held up to the light.



Whole milk



Calf Milk Replacer (CMR)

## 2.1 Background Cont'd...

- Rearing schedule i.e., whole milk and/or Calf Milk Replacer (CMR) is key to the growth of a calf into a future dairy cow



### 3. Cost analysis: CMR vs Cow milk

- Choosing between whole milk and/or Calf Milk Replacer (CMR) is a decision that is based on finances and efficiency.

Calf Milk Replacer (CMR)



Consider CMR of 20 kilograms (kg)

- CMR price: € 62 (UGX 261,72), equal to € 3.10/kilo (UGX 13,085.10)
- Constituting Solution: 130-160 gr/litre.
- Feeding rate: 6 litres/calf/day.
- Hence,  $6 \times 130 \text{ gr} = 780 \text{ gr powder OR}$ ;  
 $6 \times 160 \text{ gr} = 960 \text{ gr powder}$
- 780 grams = € 2.42/day (UGX 10,214.82) OR;  
960 grams = € 2.98/day (UGX 12,578.58).

Conversion rate: 1 Euro = UGX 4,221

### 3.1 Cost analysis: CMR vs Cow milk

- Compare with what you get paid (milk) and what you have to buy (CMR)



- Milk price: € 0.35 (UGX 1,477.35) per litre
- The milk is assumed to have;
  - Average fat & protein %
  - Low somatic cell count (SCC)
- Feeding rate: 6 litres/calf/day
- $6 \times € 0.35$  (UGX 1,477.35) = € 2.10 (UGX 8,864.10)/calf/day



**Note:** *Never feed abnormal (mastitis, high SCC milk) to your calves.*

## 4. Comparison: Cow Milk versus Calf Milk Replacer

### Cow Milk

- Amount.
  - Trials 10 litres/day.
- Composition.
  - Varying, but always use same cow!
  - (too) low in trace elements and vitamins.
  - Disease transmissions possible
- Pasteurized (advised).
- Temperature
- Costs (Consider selling price to processors)



### CMR

- Amount.
  - Scheduled/recommended by supplier
- Composition.
  - Always same.
  - Required Vitamins /trace elements.
  - Disease free.
  - Preparation/constituting!
- Drink temperature.
- Costs (of CMR powder, water, electricity)



## 4.1 Comparison cont'd: Cow Milk

### Cow Milk

#### Amount

- Trials 10 litres/day.

#### Composition.

- Varying, but always use same cow!
- (too) low in trace elements and vitamins.
- Disease transmissions possible

Pasteurized (advised).

#### Temperature

Costs (Consider selling price to processors)



- When calves are suckling, they probably drink a lot more. It is also possible to feed more, but then there is absolutely no place for even small mistakes.
- Young calves need regularity, it is very important to feed them the same kind of milk throughout the rearing period, preferably from the same cow.
- Cow milk has its risks; in general cow milk is lacking several trace elements and vitamins that are crucial for the calf's growth and health status. To fill up this gap concentrate is needed. Also, several diseases can easily be spread throughout milk (John's Disease).
- To take away some risks, it is better to pasteurize the milk before feeding.
- Feeding temperature always must be 39-40°C.
- Calf rearing is always very expensive, milk consumed by the calf cannot be sent to the processor.



## 4.2 Comparison cont'd: Calf Milk Replacer

### CMR

Amount.

- Scheduled/recommended by supplier

Composition.

- Always same.
- Required Vitamins /trace elements.
- Disease free.
- Preparation/constituting!

Drink temperature.

Costs (of CMR powder, water, electricity)

- Always choose the feeding schedule/recommendations advised by the supplier of the product.
- The big advantage of CMR is that calves always consume the same milk throughout the rearing period. Trace elements and vitamins are tailored to the needs of the young calf.
- Disease transmission throughout milk is excluded.
- Preparation is an art, training is advised!
- Feeding temperature always must be 39-40°C.
- CMR as a product is no doubt expensive; but CMR in case of health and growth might be relatively cheap.



## 5. Calf feeding schedule: Whole milk



- Many decisions have to be made in calf feeding schedule, there is no room for mistakes. Consider;
  1. How much.
  2. How often.
  3. How exact.
- Feeding schedule for whole/CMR milk depends on;
  - i. Objectives.
  - ii. Weaning weight.
  - iii. Availability of concentrates.
  - iv. Management issues (roughage quality).

## 5.1 Example of a feeding schedule

Rearing Period			Milk	Water
8 weeks	10 weeks	12 weeks	2x/day	<i>Ad lib</i>
04-08 days	04-10 days	04-12 days	2.0 litre	
09-16 days	11-20 days	13-23 days	2.5 litre	
17-42 days	21-50 days	24-55 days	3.0 litre	
43-46 days	51-60 days	56-64 days	2.5 litre	
47-51 days	61-66 days	65-75 days	2.0 litre	
52-56 days	67-70 days	76-84 days	1.5 litre	

**Note:** Constant nutrition in terms of quantity and composition is important for a successful rearing period/result.

## 5.2 Whole milk cont'd: **Observe rule 1**



**1**

Feed every day, milk from **same** cow to **same** calf.



### 5.3 Whole milk cont'd: Observe rule 2



2

Feed every day, **healthy** and clean milk, **same temperature**.



5.4 Whole milk cont'd: **Observe rule 3**



3

Feed every day, **healthy** and **clean** milk at the **same** time.



Feeding and treating a calf is similar to a baby child.

## 6. Calf feeding schedule: Calf Milk Replacer (CMR)



- There are many products (CMR) in the market, but with huge variety in terms of quality. Always compare different brands.
- Preparation of CMR is a very sensitive and precise job, mistakes are not allowed. Every mistake during preparation has a negative impact on health status of the calf.

**Be aware!** Not every brand has the same concentration, read the operating instructions carefully.

## 6.1 CMR Cont'd: General rules



Calf Milk Replacer (CMR)



Exact weighing!



Exact measuring  
(temperature)!



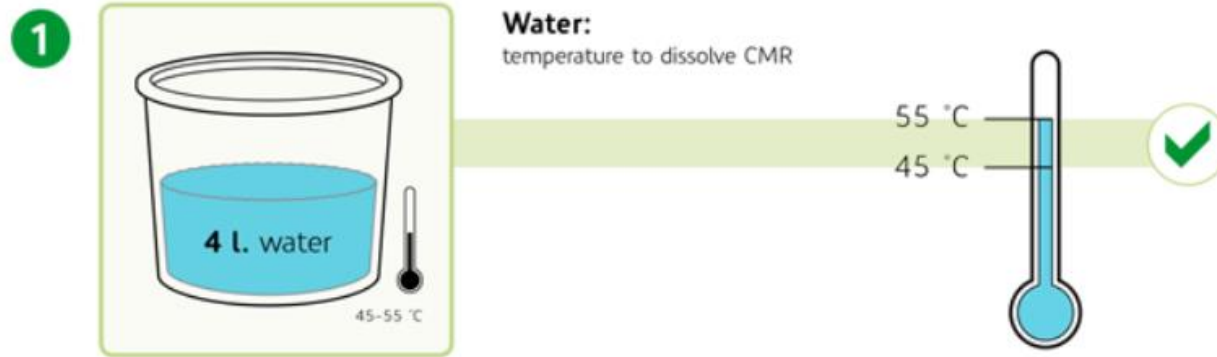
5 minutes stirring



Use clean warm water



## 6.2 CMR Cont'd: Water temperature



When the powder is dissolved in warm water, there is less chance of lump formation.



### Further reading

Example how to prepare Calf Milk Replacer

<https://www.frieslandcampinaingredients.com/insight/ready-to-feed-kalvolac-read-here-how-to-prepare-it-and-what-the-optimal-dosage-is/#content>

### 6.3 CMR Cont'd: Lump formation

- Lump formation in the (not properly prepared) milk can have very unpleasant consequences to the calf; digestion process in the abomasum will be disrupted and the calf will develop diarrhea.

#### How to avoid lump formation

- CMR/powder must always be stored in very dry environment.
- Bags in use/opened, must be properly closed.
- Use hot water of 55° Celsius to dissolve the powder.
- Manual stirring time is at least five minutes and alternately turning right and left.
- Before feeding, check the milk for the presence of lumps
- After proper stirring add the required amount of water and be sure drinking temperature is 39-40° Celsius.



## 6.4 CMR Cont'd: Concentration/dosage of CMR powder

2



Add 1 kg CMR powder

### Concentration (dosage CMR powder):

**Too much CMR powder:**  
too much nutrients > feeding diarrhoea

**Perfect concentration:**  
1 kg CMR powder = 8 litres finished CMR



**Too little CMR powder:**  
CMR in rumen instead  
of abomasum > bloat

### Concentration Table (Most usual)

CMR	Final Concentration
0.125 kg	1 litre milk.
0,750 kg	6 litre milk
1 kg	8 litre milk
2,5 kg	20 litre milk
5 kg	40 litre milk
10 kg	80 litre milk

## 6.5 CMR Cont'd: Concentration/dosage of CMR powder

- One of the biggest mistakes while preparing CMR.



+



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Concentration =  $1000/9 = 111\text{gr/lit}$



+



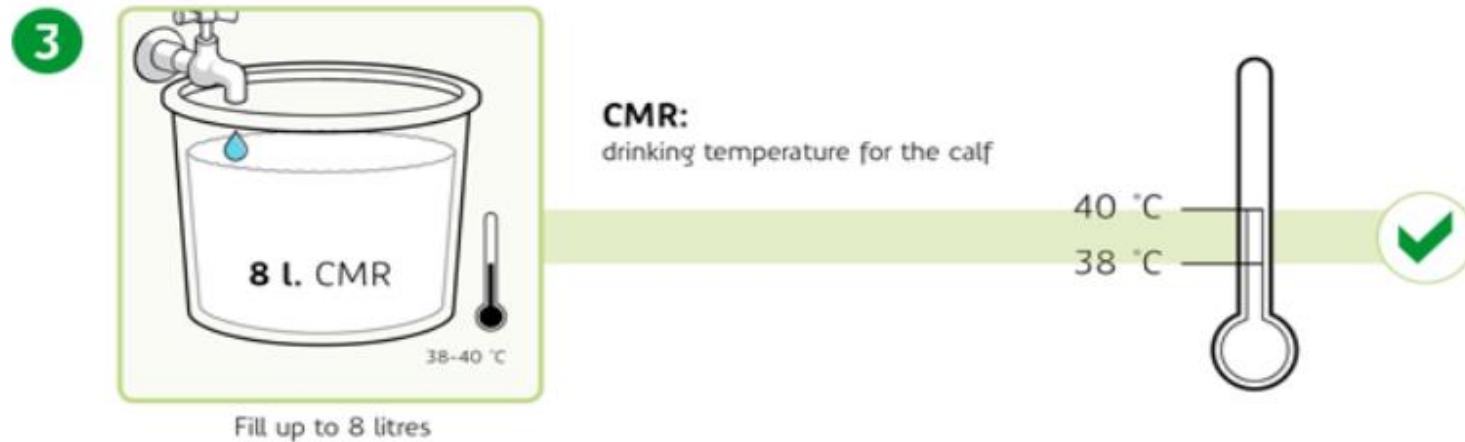
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Concentration =  $1000/8 = 125\text{gr/lit}$

## 6.6 CMR Cont'd: Drinking temperature (Cold Milk)

- (Too) cold milk will enter the rumen instead of the abomasum, and sucks energy from the calf to warm up again; this means the energy that cannot be used to gain weight,



## 7. Diarrhoea

- Diarrhoea is caused by insufficient milk preparation
- It results in disturbed protein and fat digestion

### Symptoms

- No fever.
- Calves are fairly active.
- Drinking ability is good.
- Manure is (very) thin.
- Manure is yellow/whitish.
- Manure smell is acid.
- Calf shits more often.



## 7.1 Diarrhoea Cont'd...

### Causes

- Incorrect concentration.
- Poorly dissolved milk powder.
- Wrong resolution temperature.
- Wrong feeding temperature.
- Incorrect provision of milk causes poor function of oesophageal reflex.



## 8. Summary: Take home message

- Feeding and treating calves is similar to that of a baby child.
- Every mistake you make is shown to you by the calf.
- Feeding schedules must be followed strictly.
- Changes and adjustments can be implemented slowly and must be well considered.
- The success of calf rearing depends on the farmers attitude knowledge and skills.
- There is no room for nonchalance; the calf demands regularity, time and precision.

Further reading: <https://www2.sprayfo.com/calf-rearing>



**-END-**