

Supplementary Materials

Information S1. Colostrum Management Guidelines

Farmers were asked to adhere to the following colostrum management recommendations:

- 1.1 Wash all the equipment and recipients used for colostrum with hot water and soap to guarantee the complete elimination of fat that can contribute to bacterial contamination with a high probability.
- 1.2 Colostrum milking should be done as soon as possible, and near the feeding time to avoid the loss of immunoglobulins and prevent contamination.
- 1.3 If possible, the colostrum should not be pooled to avoid diluting the IgG concentration.
- 1.4 Estimate the IgG concentration using Brix digital refractometer before colostrum administration.
- 1.5 Adapt the volume of colostrum administered depending on the obtained Brix% results following the table provided below.
- 1.6 Administer colostrum with values at least over 17% of Brix value.
- 1.7 Feed with fresh colostrum by bottle nipple or oesophageal tube.
- 1.8 The first feeding must take place in the first 6 hours after birth and the rest of the volume must be given in 3 feedings, and when possible, twice a day for 2-3 days more.

Table S1. Colostrum total volume feeding adaptation in the first 12 hours and the successive feedings depending on the values obtained by Brix refractometry.

Brix Refractometer Value (%)	Total Volume (Liters in the First 12 h; First Two Feedings)	Total Volume (Liters During 12-24 h; Successive Feedings)
>21	4	2
20-19	4,5	2,5
18-17	5	3

Table S2. Colostrum, feeding, and dry period management in farms.

Farm	Total Number of Heads	Number of Milked Heads	Colostrum Extraction Time	Colostrum Feeding Days; Liters; Feedings/Day	Colostrum Origin	Feeding Until Weaning	Weaning Age (Days)	Dry Period (Days)/ Treatment
A	310	200	ordinary milking time	3; 2.5; 2	Mixture from recently calfed dams	Milk replacer	60	45-60/ blanket
B	140	75	shortly after parturition	1.5; 2; 2	From a multiparous dam own or not	Farm milk	70	45/ selective
C	240	100	ordinary milking time	2; 2 2	From own dam	Milk replacer	60	45/ blanket
D	250	120	shortly after parturition	1.5; 2; 2	From a multiparous dam own or not	Milk replacer	70	60/ blanket

Table S3. Vaccination programs run on farms.

Farm	Diseases	Vaccination Scheme
A	Infectious bovine rhinotracheitis	Primary vaccination at 6 months of age, and revaccination one month after and yearly during the dry period.
	Parainfluenza, Bovine respiratory syndrome, respiratory disease y <i>Mannheimia haemolytica</i>	Yearly during the dry period.
	Clostridiosis	Yearly during the dry period.
	Mastitis by <i>Streptococcus</i> spp, <i>Staphylococcus aureus</i> and <i>Escherichia coli</i> strains	Heifer: Primary vaccination at 18 months of age and revaccination at 24 months of age. Lactating cows: revaccination yearly during the dry period.
	Parainfluenza, Bovine respiratory syndrome, respiratory disease y <i>Mannheimia haemolytica</i>	Yearly during the dry period.
	Neonatal diarrhea	Yearly during the dry period.
B	Clostridiosis	Blanket vaccination in March in animals over 3 months of age.
	Bluetongue virus	Yearly during the dry period.
C	None	No vaccination is performed.
D	Infectious bovine rhinotracheitis	Blanket vaccination every 6 months.
	Bovine viral diarrhea	Yearly blanket vaccination.
	Clostridiosis	Blanket vaccination every 6 months.

Table S4. IgG estimation in serum.

Farm	Calf	Serum Brix% Values	Serum IgG (mg/mL)
A	1	7	3.33
A	2	9.3	3.33
A	3	7.4	10.42
A	4	8	3.86
A	5	7.4	6.02
A	6	9.2	7.62
A	7	8.1	5.90
B	1	8	22.50
B	2	11.3	27.33
B	3	10.6	49.82
B	4	9.5	30.31
B	5	10.01	37.60
B	6	10	17.40
B	7	8.7	17.40
B	8	8.3	10.17
C	1	10.6	24.08
C	2	9.1	8.67
C	3	8.7	7.28
C	4	10.4	35.75
C	5	9.5	9.98
C	6	8.9	13.45
C	7	10.8	38.54
C	8	8.6	21.94
C	9	6.6	2.67
C	10	10.4	19.62
D	1	10.4	19.36
D	2	7.9	6.02
D	3	8.2	7.45
D	4	8.3	14.75
D	5	8.7	37.60
D	6	7.1	2.35
D	7	9.4	13.24