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EVALUATION OF CALF MANAGEMENT RELATED TECHNOLOGIES AT FARMER'S LEVEL UNDER TECHNOLOGY TRANSFER PROJECT

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Some of the recommended calf management related techniques were evaluated under field conditions of Toba Tek Singh with the support of Endowment Fund Secretariat University of Agriculture Faisalabad.The objective was technology transfer through trials as adoption trend of techniques boost through this way. For this purpose, three trials were conducted and in each trial recommended technique was compared with the traditional practice that was on going. In first trial, ten calves were fed colostrum within an hour post milking and other ten calves after dam placenta expulsion. Data related to calf health, dam health, time of placenta expulsion was recorded. Study results indicated that up to 90% calves remained healthy due to timely colostrum feeding but 50% calves in second group showed the symptoms of white scour and bloat frequently up to two months age and 30% calves died. Time of placenta expulsion decreased to a large extent due to in time colostrum feeding as 90 % dams expel placenta with in 2 hour post calving. However, time of placenta expulsion increase due to delayed colostrum feeding as 50 % dams expel placenta at 12 hours, 30 % at 3 hours post calving and 20 % showed the problem of retained placenta. Delayed placenta expulsions lead to mastitis (30 %), metritis (20 %) and prolaps (20%) during a study period of 2 months. In second trial, 16 calves were selected and divided into two groups. One group was fed the milk through artificial mean (bottle) and other group as farmer's routine (direct suckling). Data regarding body condition of calf and dam udder / teat status was recorded up to 2 months. Direct suckling was found injurious both for calf and dam. About 70% calves remained underfed and others overfed. Fifty % calves damaged the teats of dams by teeth and 30 % dams showed the symptoms of mastitis. However, feeding the calves through artificial means get the exact quantity of milk (10% of body weight) and remained healthy (87.5 %) and in good condition. In third trial, effect of naval cord care was determined on calves' health. For this purpose, the naval cord of eight calves was properly cut and sprayed and other group kept as such (no naval cord cut and care as farmer's routine). These calves remained under observation up to 2 months age. Trial results indicated that naval cord care kept all the calves safe from omphalitis. However, in untreated group 50% calves showed the symptoms of omphalitis and 25 % died due to septicemia.

Keywords: Colostrum, method of feeding, naval cord, calves, field conditions

INTRODUCTION

The annual milk production is over 34 million tons because of which Pakistan is rated the forth largest milk producer in the world but still country has to import milk and milk products to fulfil the domestic demand (Anonymous, 2006-07). This import costs a huge amount of foreign exchange. Low dairy sector productivity requires to be enhanced to meet not only the dietary needs of human population but also to produce surplus to earn foreign exchange through exports. Due to ever increasing human population and their living standards the demand for animal protein particularly that of milk is increasing day by day but milk production is not increasing at the same pace. Increase in milk production is only possible if farming community start to adopt the recommended dairy farm management techniques and reject the traditional practices. There are many factors of low productivity in Pakistan but limited genetic potential exploitation and farming on traditional lines are leading factors (Bilal *et al.*, 2006; Gill, 1998). Thus, it is need of hour to eliminate the factors of low productivity by changing the farmer's mind from traditions to scientific lines.

Keeping calves healthy is very imperative to prepare them as a replacement stock (future dairy animals). At farmer's level calves are neglected class of animals, managed traditionally (Shah, 1994). Colostrum is not fed in time (within an hour post calving) with a wrong idea that colostrum feeding is injurious till the dam cleans placenta. Calf born without any immunity and colostrum feeding is the only weapon to develop it (Swanson *et al.*, 2000). Colostrum's chief importance is to provide antibodies which give the newly born calves resistance against diseases. In addition, colostrum acts as a laxative which aids in removing digestive residues from the gut of the newly born calf. Delay colostrum feeding leads to high calf mortality. Calf mortality at farmer level is very high and almost 30% calves die before attaining the age of two months resulting monetary losses for the dairy farmers (Bilal, 2004). The high incidence of omphalitis is also one of the leading factors of high calf mortality. Farmer's view is that cord will dry with the passage of time but

frequently it breaks before drying and allow the bacteria to enter through that broken spot resulting infection that circulate in blood and cause mortality. At present, calf raising is not considered economical. The cost of rearing dairy replacement heifers can be reduced by accelerating growth rate (Hoffman *et al.*, 1996). Stunted growth badly affects the production capacity of the animals throughout their productive life. The initial growth has effect on early development and subsequently in attaining early maturity weight because birth weight is positively correlated with growth rate and the growth rate is correlated with early maturity (Heinrichs *et al.*, 1995). To reduce calf mortality and age of maturity in heifers, farmer's training is a good approach. Technology transfer through trials at farmers level can lead to increase the adoption trend as farmer get the opportunity to observe the benefit of recommended practices and demerits of traditional practices. The present study was therefore planned to evaluate the recommended calf management related techniques under field conditions with the aim to disseminate the techniques efficiently and effectively.

MATERIAL AND METHODS

In this study three recommended techniques related to calf management were evaluated under rural areas of T.T. Singh. In first trial, 20 newly born calves were selected from 376 J.B. Bassi old and divided into two groups (RP and TP). Calves of group RP were provided colostrum with in an hour post calving(as recommended) and the other group was fed colostrum after dam's placenta expulsion (a tradition at farmer's level). Both calves and dams remained under observation up to two months. Data regarding to calf health status, time of dams placenta expulsion and dams health status were collected.

The objective of second trial was to determine the effect of feeding methods (natural vs. artificial) on the performance of buffalo calves. In this regard, 16 newly born calves were selected from 376 J.B Bassi new and divided in to two groups (N and A). Calves of group N allowed to directly suck their dams as desired by the farmers and group A were fed according to requirement through artificial mean (bottle feeding). Study duration was 2 months. Data in terms of body condition, disease problem and mortality rate of calves along with udder health of dams were recorded. The third trial was conducted at 377 J.B. on 16 newly born calves irrespective of species with the aim to determine the impact of naval cord care on the health status of calves. Eight calves acted as control (C) and other served as treated group (T). With in two days post calving, naval cords of calves (T group) were cut and sprayed by pink spray. Both groups remained under observation up to two months age.

Data collected were subjected to analysis and presented in tabulated form.

RESULTS AND DISCUSSION

Colostrum feeding

Colostrum feeding with in 1 hour post calving was beneficial both for calves and dams. About 90 % calves remained healthy by feeding the colostrum with in an hour post calving (RP group) and only 10 % calves showed the problem of diarrhea at 20 days age. However, in TP calves, 50 % calves suffered from white scours/bloat frequently and 30 % died up to 1 month age. Time of placenta expulsion in dams decreased to a large extent due to in time colostrum feeding to the calves. Ninety % dams of RP calves expelled placenta with in 2 hours post calving and none had the problem of retained placenta. About 50 % dams of TP calves expelled their placenta between 12-24 hours post calving and 20 % showed the problem of retained placenta. It was also observed that delayed placenta expulsion acted as predisposing factors for various diseases such as mastitis, metritis and prolaps.

Among dams of group I calves, only 10 % suffered from mastitis and 90 % did not showed any above mentioned disease up to 2 months post calving. However, among dams of TP calves, 70 % showed the problems of mastitis (30 %) with in 2 days post calving, metritis (20 %) with in 2 months post calving and prolaps (20 %) with in 3 days post calving. The results of the present study are in line with those of Bilal, 2004: Swanson et al., 2000 who reported that colostrum feeding with in an hour is beneficial both for calves and dams.

Mortality in TP calves may be attributed to delay colostrum feeding. As calves born with out any immunity and colostrum is the only weapon to develop it. Immunoglobulins are responsible to develop the immunity against diseases but % absorption of these immunoglobulins decreased with the passage of time and almost becomes 0 at 24 hours post calving. The above justification was also supported by Lona and Romero, 2001: Kehoe et al., 2007 and Vann and Baker, 2001.

Early placenta expulsion in dams of RP calves might be due to release of oxytocin hormone that lead to detach the cotyledons from carbuncles. Prevalence of mastitis in dams of TP calves may be due to presence of colostrum in udder for longer time that lead to udder pressure & damage the alveoli and provide the opportunity to mastitogens to flourish. Prevalence of metritis and prolaps might be due to delayed placenta expulsion that cause irritation and internal injury.

Feeding method and naval cord care

Results indicated that direct suckling by calves was found injurious both for claves and dams (Table 2). About 62.5 % calves in N group remained weak and 37.5 % suffered from tympany, impaction and constipation frequently. However, calves fed with artificial method, 75 % remained in very good condition and 87.5 % did not show any disease problem. About 50 % dam's teat were injured by calves due to direct suckling.

milk according to requirement. However, weaker calves in N group may be do to that these calves get the milk as farmer's desire (may remained under fed).

CONCLUSION

Mortality rate in calves can be reduced by colostrum feeding in time, naval cord care and feeding according to requirement.

Table 1. Effect of colostrum feeding on calf and dam health

Parameters	Within 1 hr post calving (as recommended, RP)	After dam's placenta expulsion (farmer's routine, TP)
Calf status		
Healthy	9 (90)	5 (50)
Diseased	1 (10)	5 (50)
Mortality	-	3 (30)
Time of dam's placenta expulsion (hr)		
1-2	9 (90)	-
3-4	1 (10)	3 (30)
12-24	-	5 (50)
R.P*	-	2 (20)
Health Status of dams		
Mastitis	1 (10)	3 (30)
Metritis	-	2 (20)
Prolaps	-	2 (20)
Normal	9 (90)	3 (30)

Figures in parentheses indicate percentage. *Retained placenta

Table 2. Effect of feeding method on the performance of calves

Parameters	Natural (as farmer's routine, N)	Artificial as recommended, A)
Body Condition		
Very good	2 (25)	6 (75)
Good	1 (12.5)	2 (25)
Weak	5 (62.5)	-
Health status		
Healthy	5 (62.5)	7 (87.5)
Diseased	3 (37.5)	1 (12.5)
Mortality	2 (25)	-
Injury on dam's teats	4 (50)	-

Figures in parentheses indicate percentage

Naval cord care kept all the calves safe from omphalitis. However, in untreated group 50 % calves showed the symptoms of omphalitis and 25 % died due to septicemia. Naval cord care is the important practice to keep calves healthy (Hoffman *et al.*, 1996, Ahmad *et al.*, 2004)

The probable reason of more healthy calves in group A might be attributed that these calves were provided

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