International Journal of Livestock Research, Vol. 10 (6) June' 2020
http://www.ijlr.org
eISSN: 2277-1964
NAAS Rating 2020 – 5.36

Original Research

Influence of Various Managemental Interventions on Tellicherry Kids Survivability in an Organized Goat Farm

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How to cite this paper: Muthukumar, S., Thanga, T. V., Sundaram, S. M., Hemalatha, S., & Ronald, S. M. (2020). Influence of Various Managemental Interventions on Tellicherry Kid's Survivability in an Organized Goat Farm. *International Journal of Livestock Research*, 10(6), 57-60. doi: http://dx.doi.org/10.5455/ijlr.20200405033152

Received : Apr 05, 2020
Accepted : Apr 22, 2020
Published : Jun 30, 2020

Abstract

A study was carried out to find out the influence of Managemental Interventions on kid survivability in an organized goat farm with more than 500 breedable Tellicherry does at Kancheepuram district, Tamil Nadu. Detailed study was carried out in all the 52 kids died out of 551 live kids born during the study period of nine months. The influence of following managemental interventions on kid survivability were studied viz, vaccination of dam ($\chi 2$= 4.89), suckling mode ($\chi 2$=5.26*), kidding pen ($\chi 2$=5.36*), nutritional management of dam ($\chi 2$=6.64**) and shed disinfection ($\chi 2$=0.76NS). The chi square analysis of the data revealed that significantly higher (P<0.01) survival rate of kids were recorded in following interventions viz, vaccination of dam in late gestation against Enterotoxaemia and controlled nursing of kids (suckling mode). Interventions like provision of kidding pen and extra concentrate supplementation during the last month of gestation were negatively influenced the kid survivability.*

Keywords: Disinfection, Influence, Kid Survivability, Kidding Pen, Suckling Mode

Introduction

Goats (*Capra hircus*) are an important species of livestock in India, which contribute greatly to the agricultural economy, especially in areas where the crop and dairy farming are not feasible. Among the livestock, goat acts as buffering bank in many areas of the world, which is kept for meat, milk, manure and fiber. In many areas of the world especially to marginal and landless farmers, goat has replaced cows due to its higher prolificacy, shorter generation interval, relatively intelligent and resistant to several infections hence often described as "poor man's cow" (Aziz *et al*., 2010 & Dammasa *et al.*, 1992). Goat rearing has been promoted by various governmental and non-governmental organizations all over the world to mitigate rural poverty, especially in the regions of arid/semi-arid tropical environments, due to their drought-tolerant ability, browsing of wild grasses, tree buds and leaves etc. They require moderate care and reproduce quickly and start to bear kids from the age of one year old (Sundaram *et al*., 2012). The success of goatery depends upon the survival of offspring's produced and accordingly the mortality & morbidity of offspring's are of great concern to farmers. Since, it represents an irreversible financial and genetic loss. Neonatal mortality is a principal factor ascertaining the productivity of herd and is also a sensitive index of management efficiency (Chowdhury *et al*., 2002). The kid mortality before weaning is the single major cause of economic loss to goat farmers, Goat production system in India has started slowly moving from traditional low input extensive system to high input commercial intensive production system. One of the important limiting factors of intensive goat rearing is the high level of kid mortality, which affects the economic profitability of commercial goat farming. Several factors have been reported as potential causes of kid mortality viz, litter size, sex, birth weight, season etc (Subramaniyan *et al.*, 2016). This has to be reduced by making improvements in the management strategies. The present study, therefore, has been planned to identify the influence of improved management practices in improving survivability of kids.

Materials and Methods

The study was carried out in a commercial goat farm with more than 500 breedable Tellicherry does. The total numbers of births recorded during the study period was 551 kids. The mortality among kids that occurred during neonatal, pre weaning and post weaning periods was the subject of interest to find out the influence of specific Managemental Interventions in reducing kid mortality, seventy five (75) Tellicherry does in advanced stages of pregnancy were randomly selected & allotted in to five groups and subjected to following treatments. Each group consisted of fifteen (15) does and all animals were reared under standard management conditions.

Influence of Specific Managemental Interventions in Reducing Kid Mortality

The influence of different Managemental Interventions *viz.* kidding pen, extra concentrate feeding, disinfection of shed floor, vaccination of dam and suckling mode were studied in relation to improving the survivability of kids.

Treatment-I

The kidding pens were designed as per the ISI recommendations (1.5 X 1.2 M) in which 15 no. of animals nearing kidding i.e. one week prior to kidding were housed individually. The pregnant does in the kidding pen were provided with *ad libidum* water, concentrate feed, dry and green fodder.

Treatment-II

The pregnant does in this group were provided with concentrate @ 500g/day during last month of gestation with 15% DCP, 70% TDN in addition to standard diet.

Treatment-III

In this treatment, commercially available glutaraldehyde-based disinfectants were sprayed on the floor after dissolving 250 ml in 50 litres of water as suggested by manufacturer and applied at weekly intervals in the pens by using compressor motor-based spray machine.

Treatment-IV

Influence of ET vaccination of dam during the last month of gestation was studied by immunizing 15 no. of does' in advance stage of pregnancy against *Clostridium perfringens* type D.

Treatment-V

The influence of suckling mode (continuous-vs-controlled nursing) was also studied, for which kids from another fifteen animals were taken as trial group and studied against controlled group. Trial animals were allowed with dam only trice for nursing where as in continuous mode kids are always with its dam.

Analysis of Data

The data collected were subjected to standard statistical analysis namely Chi square analysis using Microsoft excel 2010.

Results and Discussion

Influence of Kidding Pen on Kid Survivability

The results revealed that there was a significant influence of kidding pen on kid's survivability (χ^2=5.36*). It could be observed from the results that the survivability of kids kept under kidding pen was 81.3% whereas it was 95.74 % in the control group. This decreased survivability of kids that were kept in kidding pen might be due to excess suckling of milk and restricted physical movements of kids. In contrary to the findings of current study Kaushish (2010) and Petros *et al*. (2014) observed better survivability of kids under kidding pen in their study.

Influence of Extra Concentrate Supplementation of Dam on Kid Survivability

The results revealed that there was a significant influence (χ^2=6.64**) of extra concentrate supplementation on kid survivability. It could be observed from the results that the maximum survivability was observed in the control group (91.94%) followed by does fed extra concentrate feed (79.07%). However, Chowdhury *et al.* (2002) observed a significantly higher level of kids survivability in dams which were supplemented, which concurred with Cheema *et al.* (2002), Rastogi *et al.* (2006) and Mushi *et al.* (2007). Increased milk yield of dams leading to over suckling of milk by the kids coupled with lack of adequate exercise led to neonatal scouring and other complications. Moreover, supplemented dams produced larger sized kids leading to dystocia which also contributed to kid losses.

Influence of Shed Disinfection on Kid Survivability

The results revealed that there was no significant difference in survivability between the sheds disinfected at weekly and monthly intervals (χ^2=0.76^{NS}).The survivability of kids in the shed which was disinfected at weekly intervals was 97.87 % and the same for the sheds that was disinfected at monthly intervals was 89.00.

Table 1: Specific managemental interventions to reduce kid mortality

Kidding pen	5.36*
Extra concentrate group	6.64**
Disinfection at weekly interval	0.76^{NS}
Vaccination of dam	4.89*
Suckling mode	5.26*

Influence of Vaccination of Dam

The results underscored that the vaccination of dam had significantly influenced the survivability of kids (χ^2=4.89*). The dams in the last month of gestation which were vaccinated against *Clostridium perfringens* type D recorded highest survivability of kids (98.21%), whereas in control group it was only 89.70%. This finding in the present

study was similar with reports of Niilo (1988) who reported vaccinating the dams against *Clostridium perfringens* during late gestation period significantly controlled the mortality in kids. The reason for the increased survivability among the kids born out of vaccinated dams might be due to transfer of maternal antibodies through colostrum to the new born kids.

Influence of Suckling Mode (Controlled vs Continuous Nursing of Kids)

The results revealed there was a significant influence of type of nursing on kid survivability (χ^2=5.26*). It could be observed from the results that the maximum survivability was observed in controlled nursing (97.50%) followed by continuously nursed kids (89.41%).

Conclusion

In conclusion, controlled nursing of kids @ 3 times a day for 5 minutes and vaccination of dam against enterotoxaemia during last month of gestation with adequate space for physical activity for the kids is recommended for intensive goat farms. Further customized managemental interventions need to be developed for each farm to control kid mortality.

Conflict of Interests

There is no conflict of interest.

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