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Managemental Factors Influencing Anestrus Problems in Dairy Cows

Soniya Akter Nishi[1*], Md. Jalal Uddin Sarder[1], Md. Hemayatul Islam[1], Md. Josim Uddin[1] and Shyla Sharmin[2]

[1]Department of Veterinary and Animal Sciences, University of Rajshahi, Bangladesh

[2]Department of Livestock Services, Ministry of Fishery and Livestock, Bangladesh

*Corresponding author: Soniya Akter Nishi, Department of Veterinary and Animal Sciences, University of Rajshahi, Rajshahi-6205, Bangladesh, Tel: 008801711156378; E-mail: soniyaakternishi13@gmail.com

Abstract

This study was carried out to determine the prevalence of anestrus problems in dairy cows associated with managemental factors such as housing system, feed quality, deworming and health management of dairy cows. Data were collected by interviewing the owner of the cows using questionnaires from selected private dairy farms and Rajshahi Dairy and Cattle Improvement Farm (RDCIF) at Rajshahi district during the period from January 2016 to December 2016. A total of 500 dairy cows were surveyed to find out the prevalence of anestrus problems in relation to housing system,feed quality,deworming and health management of cows. The raw data were then sorted, computed, coded and statistically analyzed with the help of latest version of SPSS statistics software package. Our findings revealed that, the overall prevalence of anestrus in cows was 40.2%. The housing system, feed quality, deworming and health management of cows influenced the prevalence of anestrus in cows. The prevalence of anestrus was the highest in poor housing system (45.16%) and the lowest in good housing system (36.17%). The prevalence of anestrus was not significantly ($P>0.05$) influenced by the housing systems. Good quality of feed showed the lowest occurrence of anestrus problems (28.82%) and poor quality of feed showed the highest occurrence of anestrus problems (78.72%). The prevalence of anestrus in dairy cows was significantly ($P<0.05$) influenced by the feed quality of cows. It was observed that the incidence of anestrus was higher in no deworming measure of farm (56.96%) and lower was in regular deworming measure of farm (29.64%). The prevalence of anestrus was higher in no preventive measure of dairy cows (50.95%) and lower was in regular preventive measure of dairy cows (29.92%). Deworming and preventive measures had also significant ($P<0.05$) effect on anestrus problems in dairy cows.

Keywords: Dairy cows; Anestrus; Deworming; Incidence and Management factors

Introduction

Bangladesh is an agricultural country and most of its 16 million inhabitants live in the rural area. Livestock plays a crucial role in the agricultural economy. Although the GDP contribution of this sector is estimated at 3%, it will exceed 15% if the total contributions of livestock are considered. Livestock is one of the four major components of agriculture, with crops, fisheries and forestry. Livestock has an important role in poverty reduction, employment generation, and empowerment of women and sustainable development of the country in spite of limited cultivable land. Livestock is an integral part of the smallholder subsistence farming, and an important source of nutrition. Livestock contributes to national GDP through production of milk, meat, hide, skin and eggs. The country earns about 13% of foreign exchange through hide and skins export [1]. The sector supplies 42.5% of the animal protein in the form of milk, meat and eggs [2]. Among the livestock, cattle in Bangladesh form an inseparable and integral part of agriculture and it ranks twelfth in cattle population in the world and third in Asia, but it yields only 21% of milk production and 34% of beef production in the world [3]. The condition of livestock in Bangladesh is probably the worst in Asia. Livestock in Bangladesh include 22.9 million cattle, 1.2 million buffalo, 20.7 million goat, 2.7 million sheep, 206.9 million chicken and 39.1 million ducks [4]. Cattle and buffalo increased in 1960-1989 at 0.3 and 1.1%, respectively [5]. The number of livestock is not low in proportion

to the 160 million human populations, but the major problem lies in the low output. The average milk yield of indigenous dairy cows is only 137 litres per lactation [6] mainly due to poor genetic potential. It is estimated that daily per capita requirement of milk is 250 ml and annual requirement 12.5 million MT [4]. But the present daily per capita availability is only 45 ml and total annual production in 2006-2007 is 2.3 million MT. To meet the deficit, every year government imports milk and its products. Seventeen thousand MT powder milk was imported, costing about Taka: 2000 million ($29 M) in 2000-2001 [4]. So, an attempt was made to reduce this deficit by establishing private dairy farms and to improve local stock through upgrading by cross-breeding. But reproductive problems like anestrus in cows were the great economic problems. These disorders were major causes of reduced fertility in cows that result in failure to produce or delay in producing the total annual calf crop. It has a negative effect on efficient milk production; pregnancy and parturition were prerequisite for the initiation and maintenance of lactation. About one thirds of total cows were culled in many developed country due to fertility problems [7]. A period of anestrous following parturition was a normal physiological event and the ovarian cyclicity resumes as the involution of uterus was completed. When postpartum anestrous period exceeds 60 days, it increases the service period and consequently the calving interval and also makes dairying an unprofitable business.

Materials and methods

Study area

Initially the dairy cows were selected from different places at Rajshahi district (Kazla, Bohrompur, Bullonpur, Kumarpara, Rajpara, Baneswar, Kashiadanga, Shalbagan, Shopura, Kathalbaria, Beelpukur, Nawdapara, Buthpara etc.) and RDCIF.

Selection of animals

Different breeds of dairy cows from heifer and up to 5 parities an absolutely for dairy purpose was considered as experimental materials for this study. Extensive survey and data was collected from private dairy farms and RDCIF. A total of 500 dairy cows were surveyed among Rajshahi district and RDCIF, Rajabarihat for successful completion.

Grouping of selected cows

To achieve the goal, animals were grouped according to following considering factors:

Group I (Poor):	:	Cows were traditional feed supply (only grazing and little straw feeding) (n=94)
Group II(Medium):	:	The cows were supplied some concentrate and straw (n=125)
Group III (Good):	:	The cows were supplied balanced feed (concentrate, vitamin and mineral mixture before calving) diet including green grass and straw (n=281)

Deworming of cows

The cows were divided according to the following deworming measures

Group I (Regular): Every 2 months interval (n=280)

Group II (Irregular): Without follow the schedule (n=55)

Group I (Regular):	:	Every 2 months interval (n=254)
Group II (Occasionally):	:	Without follow the schedule (n=36)
Group III (None):	:	No preventive measure of cows(n=210)

Determination of anestrus cows

Anestrous cattle was selected as when the cows fail to mate even if it has attained 2.5 years old in case of crossbred heifer and 36th months in case of local heifer, but in case of cows of 60 days have passed since the last delivery.

Data collection procedure

Firstly a pretested questionnaire was developed for data collection. The survey and data was collected from the selected farms of Rajshahi district and Govt. dairy farm using questionnaires to find out the prevalence of anestrus problems in relation to housing system, feed quality, deworming and preventive measureof cows.The data was collected directly from farmers using questionnaire and diagnosis of anestrus was made on the basis of the history, clinical signs and gynaecological examination by rectal palpation (RP).

Housing system

The housing system of dairy cows were divided into 3 groups

Group I (Poor): The cows were kept in farm with traditional floor (n=62)

Group II (Medium): The cows were kept in farm with little facilities of concrete floor and manger but not scientifical made and poor drainage system (n=297)

Group III (Good): The cows were kept in farm with concrete floor, scientifically made and good drainage system (n=141)

Feed quality

On the basis of feed quality the studied cows were divided into the following groups

Group II (None): No deworming (n=165)

Preventive measure of cows

The studied cows were divided according to the following preventive measures

Statistical analysis

The raw data were sorted, computed, coded and statistically analyzed to calculate the prevalence of anestrus due to housing system, feed quality, deworming and health management of cows.Collected data were compiled by Statistical Package for Social Science (SPSS) software 17.0 version [8]. Statistically analyzed by Duncan Multiple range test used to know the association between different groups in respective cases. $P<0.05$ was considered as significant.

Results and Discussion

Anestrus is the most important cause of poor reproductive performance in cattle. It is also a big reproductive problem in modern dairy cow production worldwide. In present study, 40.2% anestrus syndrome was recorded [9] reported the incidence of anestrus (20.4%) [10], reported the higher prevalence of anestrus 49.9% in cows which is little bit higher than the present study [11], also reported very high incidence of anestrus. The lower prevalence of anestrus may be due to

difference in the number of sample size, farm management and breeds of cattle by suppressing estrus and ovulation.

Effect of housing system on the prevalence of anestrus in dairy cows

Effect of housing system on the prevalence of anestrus in dairy cows is shown in Table 1. It was observed that, the prevalence of anestrus was the highest in poor housing system (45.16%) and the lowest in good housing system (36.17%). The prevalence of anestrus was not significantly (P>0.05) influenced by the housing system. There is ample evidence that dry and cool environment favors the reproductive efficiency of the cow [12]. Further, the demand and humid environment as caused by poor ventilation favors microbial growth and may work as stressor for the animals [13]. The high incidence of anestrus in the animals of badly ventilated house may be due to high microbial activity and a stressful environment for the animals concerned. Therefore, it can be suggested that a well ventilated housing system is required to maintain a healthy population of cows with good reproductive performance (Table 1).

Housing system	Normal cows n (%)	Anestrus cows n (%)	F-value	P-value
Poor n=62	34 (54.83)	28 (45.16)	F=0.829	P=0.433
Medium n=297	175 (58.92)	122 (41.07)		
Good n=141	90 (63.82)	51 (36.17)		
Total n=500	299 (59.8)	201 (40.2)		

Table 1: Effect of housing system on the prevalence of anestrus in dairy cows.

Effect of feed quality on the prevalence of anestrus in dairy cows

The prevalence of anestrus on feed quality of cows is presented in Table 2. It was observed that, the prevalence of anestrus was higher in poor quality of feed (78.72%) and lower was in good quality of feed (28.82%). The prevalence of anestrus in dairy cows was significantly (P<0.05) influenced by the feed quality of cows. Similarly, Sarder [14] reported that the lowest reproductive disorders for excellent quality feed with the highest in poor quality of feed. In accordance to the present study, good nutritional status at periparturient time reduces the postpartum anestrus period in cows [15]. The number of services required per conception depends on the nutritional value of the cow [16]. The negative energy balance in the late pregnancy and early lactation suppresses the pulsatile release of luteinizing hormone and thereby results in reduced ovarian function [17,18]. Maintaining a feeding standard enough to supply proper nutrition is important for reproductive performance as well as for milk production in the dairy cows [19]. However, Kamal [20] stated that milk yield is closely associated with dry matter intake and energy intake accounted for most of the variation in energy balance in postpartum cow (Table 2).

Feed quality	Normal cows n (%)	Anestrus cows n (%)	F-value	P-value
Poor n=94	20 (21.27)	74 (78.72)[a]	F=42.998	P=0.000
Medium n=125	79 (63.2)	46 (36.8)[b]		
Good n=281	200 (71.17)	81 (28.82)[c]		
Total n=500	299 (59.8)	201 (40.2)		

Table 2: Effect of feed quality on the prevalence of anestrus in dairy cows (n=500); (Values are %, n=Number of observation; the values are a, b and c with different superscript letters in same column differ significantly with each other's (P<0.05). F=Factorial, P=Probability).

Effect of deworming on the prevalence of anestrus in dairy cows

The effect of deworming on the prevalence of anestrus in dairy cows is summarized in Table 3. It was observed that, the prevalence of anestrus was higher in no deworming measure of farm (56.96%) and lower was in regular deworming measure of farm (29.64%). Deworming measure had significant (P<0.05) effect on anestrus problems in dairy cows (Table 3).

Deworming	Normal cows n (%)	Anestrus cows n (%)	F-value	P-value
Regular n=280	197 (70.3)	83 (29.64)[c]	F=17.306	P=0.000
Irregular n=55	34 (61.81)	21 (38.18)[b]		
None n=165	71 (43.03)	94 (56.96)[a]		
Total n=500	299 (59.8)	201 (40.2)		

Table 3: Effect of deworming on the prevalence of anestrus in dairy cows (n=500); (Values are %, n=Number of observation; the values are a, b and c with different superscript letters in same column differ significantly with each other's (P<0.05). F=Factorial, P=Probability).

Effect of health management on the prevalence of anestrus in dairy cows

The effect of health management on anestrus in dairy cows is presented in Table 4. It was observed that, the prevalence of anestrus was higher in no preventive measure of dairy cows (50.95%) and lower was in regular preventive measure of dairy cows (29.92%). Preventive measure had significant (P<0.05) effect on anestrus problems in dairy cows. However, Kamal [20] stated that managemental system including the farm staffs, who have a standard operating procedure for estrus detection, realized a marginally higher (73%) detection rate by observing the animals during four 20 min observational periods per 24 h period, with additional observations during the milking periods (Table 4).

Health management	Normal cows n (%)	Anestrus cows n (%)	F-value	P-value
Regular n=254	178 (70.07)	76 (29.92)[b]	F=11.819	P=0.000
Occasionally n=36	18 (50)	18 (50)[a]		
None n=210	103 (49.04)	107 (50.95)[a]		

Total n=500	299 (59.8)	201 (40.2)		

Table 4: Effect of health management on the prevalence of anestrus in dairy cows (n=500); (Values are %, n=Number of observation; the values are a, b and c with different superscript letters in same column differ significantly with each other's (P<0.05). F=Factorial, P=Probability).

Conclusion

Results of the present study led to the following conclusions

-The prevalence of anestrus was the highest in poor housing system (45.16%) and the lowest in good housing system (36.17%).

-Good quality of feed showed the lowest occurrence of anestrus problems (28.82%). The prevalence of anestrus in dairy cows was significantly (P<0.05) influenced by the feed quality of cows.

-Deworming and preventive measures had also significant (P<0.05) effect on anestrus problems in dairy cows.

Acknowledgements

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