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ASSESSMENT OF MAJOR REPRODUCTIVE DISORDERS OF DAIRY COWS IN GONDAR TOWN, NORTH WEST ETHIOPIA

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ABSTRACT: **A cross sectional study was conducted in Gondar town from November 2016 to April 2017 with the objectives of determining the prevalence rate of major reproductive health problems of dairy cows and assessing risk factors with roles in predisposing to reproductive problems. Cross sectional questionnaire survey and regular follow-up were used to determine reproductive parameters and abnormalities. The study was carried out on a total of 316 dairy cows. From the total study animals 25% (n=79) were affected by at least with one reproductive health problem. Among the problems repeat breeder, retained fetal membrane, abortion and anestrous were mostly found with their respective prevalence of 6.96%, 6.01%, 3.48% and 2.53%. The overall prevalence of reproductive problems were significantly (P<0.05) influenced by breed, production system, age, parity, body condition and hygiene. Generally the current finding revealed that reproductive health problems commonly exist in the study area through their percentage and types vary from time to time; hence, regular reproductive health management and proper formulation of ration could be the possible solutions to alleviate the problems encountered in different production systems. From the different risk factors studied BCS and parity were significantly associated with reproductive health problems. From this study feeding, housing and health managements should be restudied and improved to reduce the incidence of reproductive problems. This study showed that reproductive disorders highly affected the reproductive performance of dairy cows. Further detailed studies on the major reproductive health disorders in the area should be carried out.**

Keywords: Dairy cows, Gondar town, Reproductive health problems.

INTRODUCTION

For years, Ethiopia ranked first in cattle population in Africa. However the dairy industry is not as developed as that of east African countries. Consequently, national milk production remains among the lowest in the world even by African standard (Zegeye, 2003). Despite the huge number of cattle in the country productivity is low due to constraints of disease nutrition, poor management and poor performance of indigenous breed. These constraints result in poor reproductive performance of dairy cattle and lower economic benefit from the sector among the major problems that have direct impact on reproductive Performance of dairy cows are abortion, dystocia, retained fetal membrane, repeat breeding and vaginal prolapse. This could be classified as postpartum and prepartum (Lobago et al., 2006). Reproductive problems are the most common which occur in lactating dairy cows and can dramatically affect reproductive potential of the dairy herd. Poor reproductive performance is a major cause of involuntary culling and therefore reduces the opportunity for voluntary culling and has a negative influence on the subsequent productivity of a dairy herd (Hossein-Zadeh, 2013).

Infectious diseases have direct impact on reproductive performance of dairy cows. They do have a potential to cause abortion, dystocia, retained placenta, clinical endometritis, uterine prolapse, anoestrus and repeat breeder. They can be classified as before gestation (anoestrous and repeat breeding), during gestation (abortion and dystocia) and after gestation (RFM and uterine prolapsed) (Shiferaw et al., 2005; Lobago et al., 2006). Among the infectious diseases, *Brucellosis* is highly characterized primarily by causing abortion in late pregnancy, retained placenta, endometritis and infertility in subsequent pregnancies in cattle. In addition to constraints of low production it continues to cause heavy economic losses and public health concern throughout the world (OIE, 2003).

Reproductive disorder of dairy animals was broadly studied throughout the world, but studies in Ethiopia are limited and mainly located in central high lands and in some parts of Eastern and Northern parts of the country. Although, major reproductive disorders greatly responsible for high economic loss in dairy cows, there is paucity of research done on the prevalence, etiology and relative importance of these problems in Gondar. Therefore, the

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present investigation had been planned to study: the prevalence of major reproductive health problems of dairy cows in Gondar and possible risk factors that play a role in precipitating such problems in dairy farms of the area. Although there are many small holder, medium size and large size dairy farms in Gondar town, few studies have been conducted on the major reproductive health problems in dairy animals (Lobago et al., 2006). Therefore, these studies were implemented with the following objectives: To study the major reproductive disorders in Gondar town, To identify risk factors important for problems that affect reproductive performance of dairy cows under existing level of management.

MATERIAL AND METHOD

Study area

This study was conducted in Gondar town, Northwestern part of Ethiopia. Gondar is located 727 km northwestern Addis Ababa in Amhara regional state and is 2220 m.a.s.1, with 1172 mm mean annual rainfall and 19.7^{o}C average annual temperature. The rainfall varies from 880 mm to 1772mm with a monomodal distribution. The area is also characterized by two seasons, the wet season from June to September, and the dry season from October to May. According to zonal agriculture office, the livestock population of Gondar registered, cattle 1,936,514, sheep, 524,083, goats, 682,264, poultry 2,124,000, donkey 223,124, mule, 12,473, horse 36,828 and camel, 606. Its area is 257 km2 (CSA, 2008).

Study population and study animals

According to the Gondar town livestock development agency, the area has large number of cattle population. However, the study population constituted of 316 dairy cows (local and cross breed) found in different farms of the study area. These animals were kept in different management systems. Sampled animals constituted different age groups, body condition scores and parity. Body condition (BCS) of the study animals was scored based on the criteria set by Matthew Man (1993), which ranged from 1 to 5. Body condition score 1 stands for cows with the very poor body condition while score 5 for cows with the very fat body condition (best condition).

Study design

A cross-sectional type of study was conducted from November 2016 to April 2017 on dairy farms found in Gondar town to determine the major reproductive problems cows, to assess the perception of farmers on major reproductive problems of dairy cattle and the associated risk factor in the dairy cattle. The study was being employ questionnaire and regular follow up in the randomly selected dairy cows.

Sample size and sampling method

A total of 316 dairy cattle with different parity, management and body conditions were included in this study. In this study the pregnant dairy cows in their trimester were followed weekly for any problems. The sample size required for this study was by considering 29% expected prevalence from previous study of Madot and Nibret (2015) depending on the expected prevalence of major reproductive disorders of dairy production and the desired absolute precision by the formula given by Thrusfield (2005) as follows.

$$N = \frac{(1.96)^2 P_{exp} (1 - P_{exp})}{d^2}$$

Where, N= Number of sample; D= Desired absolute precision; Pexp= expected prevalence. Therefore, 29% expected prevalence was used to estimate the sample size. Using 95% confidence interval, 5% precision and 29% expected prevalence, the sample size was 316:

Methods of data collection

Volunteer individuals were interviewed individually. Every data collected through questionnaire interview and regular follow up as well as personal on site observation was recorded on Microsoft excel work sheet. Data was then coded and stored.

Data management and analysis

The collected and stored data obtained from questionnaire and regular follow up were entered on a Microsoft Excel spreadsheet and analyzed using Statistical Package for Social Sciences version 20. The prevalence of reproductive problems was determined as a proportion of affected animals out of the total animal examined. The differences or association between in different risk factors such as breed, management, hygiene, age, body condition and parity with over all prevalence of reproductive problems was analyzed by using $\chi 2$ (Chi-square) technique and value of $P<0.05$ considered as significant.

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RESULT

Characteristics of respondents

Based on the questionnaire study general characteristics associated with household's respondents were distributed by sex, age, marital status and educational status was presented in Table 1. From the total interviewed respondents (N = 41), the majority (73.2%) of the respondents were male while the remaining (26.8%) were female. The majority age of the respondents in the study area ranges between 25-40 years (48.9%). This result showed that people in the most productive age are actively engaged in dairy activities. Of the total households interviewed, the majority (65.8%) were married while the remaining (34.2%) were unmarried. Concerning to level of education, the highest percentage (34.1%) of the respondents had college education 14.6% of those respondents had not attended any formal or informal education.

Table 1 - Characteristics of the respondents on sex, age, married status and educational status

Category and variables	Number of respondents (%)
Sex	
Male	30 (73.2%)
Female	11 (26.8%)
Age	
<25	6 (14.6%)
25-40	20 (48.9%)
>40	15 (36.5%)
Marital status	
Married	27 (65.8%)
Unmarried	14 (34.2%)
Educational level	
No formal education	6 (14.6%)
Primary education	13 (31.7%)
Secondary education	8 (19.5%)
College and above	14 (34.1%)

Animal management

From the total of 316 dairy cattle, 173 (54.75%) were managed intensively, 143 (45.25%) were semi intensive and of which 147 (46.52%) were local breed and the rest 169 (53.48%) were cross breed. Almost the entire respondent agreed that feeding practice depends on the availability of feed because land space and water that is important factors for cultivation of animal feed is limited in the farm area. The feed on which the animals are fed include natural pasture (cut-and-carry), grass hay, crop residues, alfa alfa, elephant grass and nonconventional feeds such as "atela" were among the commonest and mainly available feed types. Most of the respondents 82.93% (N=34) breed their animals using artificial insemination (AI) and 17.1% (N=7) use only natural method. As replied by the respondent, there was given regular drug treatment and deworming practices but they took their animals for treatment whenever diseases occurred.

Major reproductive health problems

From a total of 316 dairy cows included in the study period 25% (N=79) were found to be affected at least by one reproductive health problems. Overall prevalence of reproductive health problem sited by farmers/attendants or veterinarians in cross and local breed dairy cattle on different method of study is presented in Table 2. In this study (including questionnaire and regular follow up) major reproductive health problems were investigated. Hence abortion, retained fetal membrane, dystocia, anoestrus, repeat breeder and were found to be the major reproductive health problems containing 3.48%, 6.01%, 2.21%, 2.53% and 6.96%, respectively. Other reproductive health problems observed with lower prevalence include uterine prolapse, clinical endometritis and mixed disorder accounting 0.95%, 1.58%, and 1.58% respectively in Table 3.

Association of risk factor with reproductive health problems of dairy cattle

In this study among risk factors breed, management system, hygiene, age, parity and body condition score were considered to assess its association with the occurrence of the reproductive problems as shown on the tables below. As shown on the table 4 below, statistically no significant difference (P>0.05) was found in the prevalence of reproductive health problems with respect to breed. Higher prevalence of reproductive health related problems were found in local cattle than the cross breed and there was statistically significant association (P<0.05) of management system with the prevalence of reproductive problems. Highest prevalence was found in semi intensive management system (31.5%) and lowest in intensive system (19.7%) of management.

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As shown on table 5, the influence of age on the prevalence of major reproductive problems was assessed and the result showed that there was significant association (P<0.05) with respect to age. The prevalence was significantly highest in cows with 4-6 years age group (38.7%) followed by above 6 years age group (20.2%) while the lowest in less than four years age (14.6%) as indicated. On the other hand, hygiene of the farms show a significant difference (P<0.05) on the occurrence of reproductive problems of the animals.

As shown on table 6, the influence of body condition score on the occurrence of the major reproductive problems was also assessed and the result showed that there is statistically significant (P<0.05) variation with regard to body condition. Highest prevalence was found in cattle with good body condition (34.1%) followed by medium body condition (21.4%) while the least in cows with poor body condition (13%). Parity prevalence was significant effect (P<0.05) on the higher prevalence of major reproductive problems was found in the primiparous animals (32.2%) while the lowest in the multiparous animals (16.2%).

Table 2 - Major reproductive disorders in dairy cows in Gondar town on different methods of study.

Method of study	Total No. of observation	No. of cows with reproductive disorder	Percent affected
Questionnaire study	254	65	20.57%
Regular follow up	62	14	4.43%
Total	316	79	25%

Table 3 - Relative occurrence of major reproductive disorders in dairy cows in Gondar town.

Types of RDs	Questionnaire survey no. (%)	Regular follow up no. (%)	Total (%)
Abortion	7 (2.75%)	4 (6.45%)	11 (3.48%)
Uterine prolapsed	3 (1.2%)	0 (0%)	3 (0.95%)
RFM	14 (5.5%)	5 (8.06%)	19 (6.01%)
Dystocia	5 (1.97%)	2 (3.2%)	7 (2.21%)
Clinical endometritis	5 (1.97%)	0 (0%)	5 (1.58%)
Anoestrus	8 (3.15%)	0 (0%)	8 (2.53%)
Repeated breeding	18 (7.09%)	4 (6.45%)	22 (6.96%)
Mixed	5 (1.97%)	0 (0%)	5 (1.58%)

RDs = reproductive disorders; *Mixed problems include abortion and retained placenta, dystocia and retained placenta, dystocia and clinical endometritis, retained placenta and clinical endometritis.

Table 4 - Prevalence and association of reproductive problems with breed and management system.

Factors	Total no. of animal examined	Total no. of affected animals	Prevalence (%)	X2	p-value
Breed	169	40	23.7%	0.343	0.558
Cross	147	39	26.5%		
Local	316	79	25%		
Total					
Management system					
Intensive	173	34	19.7%	5.829	0.016
Semi intensive	143	45	31.5%		
Extensive	0	0	0		
Total	316	316	25%		

Table 5 - Prevalence and association of major reproductive problems with hygiene and age.

Factors	Total no. of animal examined	Total no. of affected animals	Prevalence (%)	X2	p-value
Hygiene					
Good	97	2	2.1%		
Poor	219	77	35.2%	39.27	0.00
Total	316	79	25%		
Age					
Below 4 years	96	14	14.6%		
4-6 years	111	43	38.7%	18.07	0.00
Above 6 years	109	22	20.2%		
Total	316	79	25%		

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Table 6 - Prevalence and Association of Reproductive Problems with Body Condition and Parity

Factors	Total no. of animal examined	Total no. of affected animals	Prevalence (%)	X2	p-value
Body condition					
Score	135	46	34.1%		
Good	69	9	13.0%	10.5	0.003
Poor	112	24	21.4%		
Medium	316	79	25%		
Parity	174	56	32.2%		
Primiparous	142	23	16.2%	10.65	0.001
Multiparous	316	79	25%		

DISCUSSION

In the present study 25% (n=79) of dairy cattle in the study area were affected by either one or more reproductive disorders based on questionnaires and regular follow up study (Table 2). This is in close agreement with 29% (n=71) which was reported by Madot and Nibret (2015) in North West Ethiopia. But it is higher than 18.5% which was reported by Hunduma (2013) in Assela town and 24.8% by Molalegne and Shiv (2011) in Bedelle for major reproductive problems, respectively. In addition, it is lower than 44.3% which was report by Hadush et al. (2013) in central Ethiopia and 43.3% by Adane et al. (2014) in Southern Ethiopia. This difference might be due to sample size, production system, study methodology and breed of animals, variation in management system as well as environmental factors that are applied in different dairy farms.

In this study (including questionnaire and regular follow up) repeat breeder, RFM, abortion and anestrous were found to be the major reproductive health problems containing 6.96%, 6.01%, 3.48% and 2.53%, respectively. Other reproductive health problems observed with lower prevalence include uterine prolapsed, dystocia, mixed and endometritis containing 0.95%, 2.21%, 1.58%, and 1.58% respectively (Table 3).

The prevalence rate of abortion recorded in the present study was (3.48%) which is close agreement with the finding of Bahlibi (2015) who reported 3.8%. On the other hand, Madot and Nibret (2015), Molalign and Shiv (2011), Degefa et al. (2011), Dinka (2013), Benti and Zewdie (2014) and Blen (2016), reported 19.7%, 13.9%, 8.7%, 14.6%, 12.2% and 7.5%, respectively which are higher than the current finding, but compared with the finding of Gashaw et al. (2011) who reported prevalence rate of 1% the present finding is higher. The difference in prevalence of abortion may be due to variation in practice of AI, genetic, nutritional status, infection, level of toxicities and husbandry management system in different areas.

Uterine prolapse represented a prevalence of 0.95% which agrees with the finding of Adane et al. (2014) who reported 0.76% and Blen (2016) who reported 0.8%. But, higher than 0.43% and 0.56% reported by Dawite and Ahmed (2013) and Bitew and Prasad (2011) respectively. In addition, the prevalence rates of mixed problems in the present study was 1.58% which is lower than the finding of Gashaw et al. (2011) who reported 5.6% in Jimma and Blen (2016) who reported 5.2%, but higher than 1.05% indicated by Simiret (2010). This variation could be due to inter relationship between of reproductive problems as predisposing factors for each other.

The prevalence rate of RFM of 6.1% in recent study is similar with the 7.1% reported by Adane et al. (2014) and but lower than (14.28%) reported by Mamo (2004), 10.1% by Blen (2016) and 19.2% by Gashaw et al. (2011) and but higher than 2.9% reported by Wujira and Nibret (2016) and 1.1% by Bahlibi (2015). The variation in the incidence of RFM may be attributed to variations in predisposing factors to which the animals are subjected to; among which include nutritional status and management such as lack of exercise. The prevalence rate of RFM in the current study could also be due to dystocia that accounted 2.21% of the problems, which is an important predisposing factor for occurrence of RFM and higher report by Gashaw et al. (2011) might be due to high report of (5.6%) mixed problems than current (1.58%), but Mamo (2004) calculated prevalence rate from positive animals not from total as current study.

Previous report on the prevalence of dystocia by Gashaw et al. (2011) 3.8% in small holder dairy production system and their reproductive health problems in Jimma town, 3.5% reported by Blen (2016), 7.75% reported by Dawit and Ahmed (2013) and 2.9% by Hadush et al. (2013) higher than the prevalence of 2.21% obtained in this study. This variation in the occurrence of dystocia may be due to the fact that it is influenced by the factors such as, age and parity of the dam as well as breed of the sire. Inseminating cows with semen collected from large sized bulls without taking into account the size and age of cows is an important factor in precipitating dystocia (Mee, 2008).

The incidence of endometritis in the present study was 1.58% lower than the prevalence rate (8.7%) reported by Hadush et al. (2013) in central Ethiopia, 28.5% reported by Amene (2006) in Alage dairy farm and 12.7% reported by Madot and Nibret (2015) north west Ethiopia. Factors influencing the incidence of endometritis may be retention of

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fetal membrane, negative energy balance, dystocia, and parity of cow had been reported to be associated with endometritis (Roberts and Stephen, 2002). Other influencing factors for endometritis may include unhygienic parturition, unwise handling of parturition and injury of uterus by AI guns during insemination.

The prevalence rate of anoestrus found in the current study (2.53%) is higher than the previous reports by Haftu and Gashaw (2009), Bitew and Shiv (2011) and Gashaw et al. (2011) who reported an overall prevalence rate of 2.29%, 1.7% and 0.3%, respectively. Previous reports of the prevalence of anoestrus of 10.1% by Haile et al. (2010), 10.26% by Haile et al. (2014), 10.3% by Benti and Zewdie (2014), 12.9% by Hadush et al. (2013), 10.2% by Amene (2006) are higher than the current finding. The difference observed in the prevalence rate of anoestrus could be due to difference in heat detection practice and management system particularly nutritional variation in animals.

The higher prevalence of repeated breeding (6.96%) found in the present study is in close agreement with 7.7% reported by Blen (2016) in Bishoftu town, but lower than 11.42% prevalence rate reported by Hadush et al. (2013) from central Ethiopia. Repeated breeding can be caused by a number of factors, including sub-fertile bulls, endocrine imbalance, malnutrition, reproductive tract infections and poor management practices such as wrong time of insemination or faulty heat detection, inappropriate semen handling and insemination techniques. Hence the difference between the findings of the current study and previous reports may be attributed to the above-mentioned factors.

The prevalence of major reproductive problems revealed that breed had not statistically significant association and a higher (26.5%) prevalence rate of major reproductive problem was obtained in local breed cows than the cross breeds (23.7%) which is similar with Bahilibi (2015). The higher reproductive problems in local breed cows is possibly due to the cross breeds included in the study are having at most 50% Holstein Friesian blood type and this could help them to adapt the tropical weather conditions and have better management than the local breeds.

A higher prevalence rate of reproductive problems was observed in these cattle its age 4-6 years age (38.7%) followed by above 6 years of age when compared to the less than 4 years of age cows. The prevalence of parity had a significant effect ($P<0.05$) on the higher prevalence of major reproductive problems was found in the primiparous animals (32.2%) while the lowest in the multiparous animals (16.2%). This work is contradicted to the previous findings of Dinka (2013) and Hadush et al. (2013). BCS had showed a statistically significant difference ($P<0.05$), in that animals in good body condition are highly affected by major RDs. This finding agrees with the report from Gashaw et al. (2011).

CONCLUSION AND RECOMMENDATIONS

The results obtained from this study demonstrate that prevalence of reproductive health problems were high in the study area. Retained fetal membrane (RFM), repeat breeding and abortion were the most important and highly encountered reproductive health problems in dairy cows in Gondar town. The possible risk factors associated with the incidence of reproductive problem in the study area includes breed, production system, age, parity, body condition. Based on the current finding the following points are recommended:

- ❖ Giving awareness to dairy farm owners, attendants and improving management system (such as; housing, feeding and health care) to reduce the incidence of reproductive problems encountered.
- ❖ Routine and periodical examination of cows during postpartum and prepartum was essential; while most cows acquire reproductive problem during these periods.
- ❖ Heat detection and proper selection of bulls for breeding taking in to account the size of the cows could help in minimizing reproductive health problems.
- ❖ Further investigation should be performed to isolate and characterize the causes of the reproductive problems and associated risk factors in the study area.

DECLARATIONS

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Conflict of interests

No conflict of interest

REFERENCES

Adane H, Yisehak T and Niguse T (2014). Assessment of major reproductive disorders of dairy cattle in urban and per urban area of Hosanna, Southern Ethiopia. Department of Animal Science, Faculty of Agricultural Sciences, Wachemo

University, P.O.Box: 667, SNNP, Ethiopia.

Amene F (2006). Studies on reproductive performance and major reproductive health problems of HF cows at Alage dairy farm. MSc Thesis, Addis Ababa University, Faculty of Veterinary Medicine. DebreZeit, Ethiopia,

Bahlibi W (2015). Assessment of major reproductive problems of dairy cattle in selected sites of central zone of tigrai region, northern Ethiopia.

Benti A and Zewdie W (2014). Major reproductive health problems of indigenous Borena cows in Ethiopia. *Journal of Advanced Veterinary and Animal Research*, 1(4), p.182-188.

Bitew M and Prased S (2011). Study on Major Reproductive Health Problems in Indigenous and Cross Breed Cows in and around Bedelle, South West Ethiopia. *Journal of Animal Veterinary Advance*, 10(6), p.723-727.

Blen M (2016). Assessment of major reproductive health problems, their effect on reproductive performance and association with brucellosis in dairy cows in bishoftu town, Ethiopia.

CSA (2008). Central Statistical Authority, Addis Ababa, Federal Democratic Republic of Ethiopia.

Dawit T and Ahmed B (2013). Reproductive Health Problems of Cows Under Different Management Systems in Kombolcha, Northeast Ethiopia. *Advanced Biology Research ,*7(3), p.104-108.

Degefa T, Duressa A and Duguma R (2011). Brucellosis and some reproductive problems of indigenous Arsi cattle in selected Arsi Zone's of Oromia Regional State, Ethiopia. *Global Veterinaria*, 7 (1), p.45-53.

Dinka H (2013). Major reproductive disorders of dairy cows in and around Asella town,Central Ethiopia. *Journal of Veterinary Medicine and Animal Health,* 5(4), p.113-117.

Gashaw A, Worku F and Mulugeta S (2011). Assessment of small holder dairy production system and their reproductive health problems in Jimma town South Weast Ethiopia, Jimma University College of Agriculture and veterinary medicine, Jimma, Ethiopia. *International Journal Applied Research,* 9, p.80-86..

Hadush A, Abdella A and Regassa F(2013). Major prepartum and postpartum reproductive problems of dairy cattle in Central Ethiopia. *Journal of VeterinaryMedicine and Animal Health,* 5(4), p.118-123.

Haftu B and Gashaw A (2009). Major Reproductive Health Problems of Dairy Cows in and around Bako, West Ethiopia. *Ethiopian Journal of Animal Production*, 9(1), p.89-98.

Haile A, Kassa T, Mihret M and Asfaw Y (2010). Major reproductive disoreders in cross bred dairy cows under small holding in Addis Ababa, Ethiopia. *World Journal of Agricultural Sciences*, 6(4), p.412-418.

Haile A, Tsegaye Y and Tesfaye N (2014). Assessment of major reproductivedisorders of dairy cattle in urban and per urban area of Hosanna, SouthernEthiopia. *Animal and Veterinary Science,* 2(5), p.135-141

Hossein-Zadeh G (2013). Effects of main reproductive and health problems on the performance of dairy cows: A review. *Spanish Journal of Agricultural Research*, 11(3), p.718-735.

Hunduma D (2013). The major reproductive disorders of dairy cows in and around Asella town, Central Ethiopia. *Journal of Veterinary Medicine and Animal Health*, 5(4), p.113-117.

Lobago F, Bekana M, Gustafson and Kindahl H (2006). Reproductive performance of dairy cow in small holder production system in sellable, Central Ethiopia. Tropical Animal Health and Production, 38, p.333-342.

Madot K and Nibret M (2015). Major Reproductive Health Disorders of Cow in and Around Gondar, North West Ethiopia.

Mamo T (2004). Study on major postpartum reproductive problems of smallholder dairy cows in and around DebreZeit. DVM Thesis, Faculty of Veterinary Medicine, Addis Ababa University, DebreZeit, Ethiopia.

Mee J (2008). Prevalence and risk factors for dystocia in dairy cattle: a review. *Veterinary Journal*, 176(1), p. 93-101.

Molalegne B and Shiv P (2011). Study on Major Reproductive Health Problems in Indigenous and Cross Breed Cows in and Around Bedelle, South West Ethiopia. *Journal of Animal Veterinary Advance,* 10(6), p.723-727.

OIE (2003). Bovine Brucellosis. Manual of standards for diagnostic tests and vaccine. Office Int. Des Epizooties. Paris.

Robert and Stepehen J (2002). Veterinary Obstetrics and Genital Disease. 2nded. China, Saunders, p.402

Simret H (2010). Major reproductive disorders of dairy cows in and around mekelle. DVM thesis,college of Veterinary Medicine, Mekelle University, Mekelle, Ethiopia.

Thrusfield M (2005). Veterinary Epidemiology. London: Blackwell Science.

Wujira E and Nibret M (2016). Major Reproductive Health Problems in Dairy Cows in Wolaita Sodo Town in Selected Farms.

Zegeye Y (2003). Imperative and chauenges of dairy production, processing and marketing in Ethiopia. In Jobre Y and Gebru G challenges and opportunities of livestock marketing in Ethiopia proceeding of the annual conference of the Ethiopia society of animal production (ESAP) Held in Addis Ababa Ethiopia, 22-24 August 2002. ESAP, Addis AbabaEthiopia, p.61-67.

To cite this paper: Simeneh Y and Moges N (2019). Assessment of major reproductive disorders of dairy cows in Gondar town, north west Ethiopia. *Online J. Anim. Feed Res.*, 9(3): 139-145. www.ojafr.ir