STUDY OF CALVING PATTERN IN DAIRY COWS

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ABSTRACT

The present study was conducted with an aim to access the different calving pattern in cross bred cows of different zones in Uttar Pradesh state . A total of 8755 calving records of cross bred dairy cows were screened retrospectively for peri-parturient reproductive disorders These calvings were from animals which were inseminated at cattle development centres in Uttar Pradesh run by BAIF Development Research Foundation during year 2010 to 2015.. The most common reproductive problems recorded in the present study were Out of total 8755 highest number 3900 (90.2%) normal calving were reported in central plain zone of Uttar Pradesh. Highest number 1140 (30.6%) of minor assistance was reported from Mid-Western plain zone of Uttar Pradesh. Highest number of dystocia cases 68 (9.6%) and 45 (6.4%) number of caesarian cases were reported from Western plain zone of Uttar Pradesh. Highest number of abortions 204 (5.5%) were reported at Mid -Western plain of Uttar Pradesh. These disorders can be managed by adopting good nutritional and manage mental facilities in the herd. Incidence of abortion was (5%) in winter and summer season while it was (6%) rainyseason. Highest numbers of calving were recorded in summer season (80%).In retention of placenta study overall 32.48%(2844) cases show retention of placenta while in Central plain of Uttar Pradesh it was 22.54% in Mid - Western plain of Uttar Pradesh 36.28% and in Western plain zone of Uttar Pradesh 73.48%. In parity wise study of retention of placenta were highest in third parity 39.38% while lowest in first parity 26.40% while in heifer it was 33.03%. These disorders can be managed by adopting good nutritional and manage mental facilities in the herd.

Keywords: Cattle, calving pattern, Zones, Incidence calving pattern,dystocia, abortion, caesarian.

1. INTRODUCTION

Reproductive efficiency is a critical component of a successful dairy programme at farmer level and acts as an important component of a profitable dairy farm, whereas reproductive inefficiency is one of the most costly problems facing the dairy farmers today. Reproductive problems occur frequently in dairy cows and can dramatically affect reproductive efficiency. Among the most common reproductive disorders that have direct impact on reproductive performance of dairy cows such as abortion, stillbirth, metritis and retained placenta; dystocia is the leading disorder that can results in impaired reproductive function. Parturition is a stressful process for cows and their calves. Abortion is the expulsion from the uterus of living foetus before it reaches a viable age or more commonly the expulsion of a dead foetus of recognizable size at any stage of gestation (Roberts, 1971).Abnormal parturition further exacerbates the stress Dystocia or

difficult calving has been along-standing problem in dairy industry. It is a leading factor of calf death at or shortly after birth and also results in uterine infections, retained placenta, andlonger calving intervals. It has been estimated that between 2 and 23% of cows in a herd experience difficult calving that require farmer or veterinarian assistance. Hence, a study was planned to check calving pattern in dairy cattle of different zones of Uttar Pradesh state.

2. MATERIAL AND METHODS

The data of 8755 calving's of dairy cattle inseminated at different Cattle Development Centres of districts of Uttar Pradesh were considered for this study. This Centres were working from June 2010 to May 2015. The available data was classified on the basis of Agro climatic Zone viz. Central plain of Uttar Pradesh (Etah and Unnao), Mid-western plain of Uttar Pradesh (Bareilly) and Western plain zone Uttar Pradesh (Meerut). Parity (Heifer,1,2,3,4,5 & Above), AI sequence number (1,2,3) , heat stage (Early,Mid,Late),body condition (No ribs exposed, One rib exposed, Two ribs exposed, Three ribs exposed),AI year (2010,2011,2012,2013,2014,2015) and season (Rainy,Summer,Winter) and calf sex (Male, female) and retention of placenta study. All observations (calving, minor assistant, caesarean, dystocia and abortion) were noted from artificial insemination of animal till calving or abortion. For collection of information mobile based device was provided to all centre incharge who collect animal wise information and this information was updated at server level to central office. Calculation of calving pattern was divided into Normal Calving, Minor Assistant, Caesarian, Dystocia and Abortion. The influence of various non-genetic factors, viz. Agro climatic Zone, Parity, Year and Season of calving period, Heat Stage and calf sex over incidence of calving pattern was analyzed by using the Chi-square method.

3. RESULTS AND DISCUSSION

Three agro climatic zone of Uttar Pradesh were considered for this study. There agro climatic zones were Central plain of Uttar Pradesh covering Etah and Unnao district. Mid -Western plain of Uttar Pradesh covering Bareilly district and Western plain zone of Uttar Pradesh covering Meerut district. Out of total 8755 calving's studied 77.4% were normal calving while 15.0% required minor assistance while 0.6% found to caesarean and 5.2% got abortion.Agro climatic Zone, Parity, Season of calving, calf sex are having effect of calving while Heat Stage, AI sequence number,year of calving were not having any effect over incidence of calving pattern

Agro Climatic Zone Wise Study of Calving Pattern

In agro climatic zones of Uttar Pradesh maximum number of normal calvings were observed in central plain zone of Uttar Pradesh. Maximum number of minor assistance was observed in mid-western plain zone of Uttar Pradesh, highest dystocia incidence was observed in western plain zone of Uttar Pradesh 9.6% while highest abortion was observed in mid-western plain zone of Uttar Pradesh 5.5%.

Table .1 Agro climatic Zone Wise Calving Pattern

Agro climatic Zone	Abortion	Caesarian	Dystocia	Minor Assistance	Normal	Grand Total
Central plain of Uttar Pradesh	221 (5.1%)	3(0.1%)	43(1.0%)	159(3.7%)	3900(90.2%)	4326
Mid -Western plain of Uttar Pradesh	204 (5.5%)	7 (0.2%)	47(1.3%)	1140(30.6%)	2326(62.5%)	3724
Western plain zone of Uttar Pradesh	27 (3.8%)	45 (6.4%)	68(9.6%)	17(2.4%)	548(77.7%)	705
Grand Total	452	55	158	1316	6774	8755

In Parity Wise Study of Calving Pattern

highest normal calving was observed in second parity (81.2%) followed by 5th and above parity (81.0%) then in fourth parity (78.9%) at fourth place in second parity (76.0%), in heifers (75.8%) and lowest in third parity (75.6%).Highest minor assistance was observed in third parity (17.4%) while lowest was in 5th and above parity (11.0%).Maximum dystocia was observed in heifers (3.0%) and lowest in second and fifth parity. Maximum cesarian were recorded in second parity (1.2%) while lowest recorded in fourth parity. Maximum abortion were recorded in fifth and above parity (7.0%) while lowest in first parity (5.2%)

Table .2 Parity Wise Calving Pattern

Lactation Number	Abortion	Caesarian	Dystocia	Minor Assistance	Normal	Grand Total
Heifer	158(5.3%)	12(0.4%)	90(3.0%)	464(15.5%)	2264(75.8%)	2988
1	90(5.2%)	8(0.5%)	18(1.0%)	301(17.3%)	1318(76.0%)	1735
2	90(4.7%)	23(1.2%)	26(1.4%)	220(11.5%)	1548(81.2%)	1907
3	59(5.0%)	10(0.8%)	14(1.2%)	206(17.4%)	897(75.6%)	1186
4	34(5.3%)	2(0.3%)	7(1.1%)	92(14.4%)	504(78.9%)	639
5 & Above	21(7.0%)	0%	3(1.0%)	33(11.0%)	243(81.0%)	300
Grand Total	452	55	158	1316	6774	8755

Artificial Insemination Sequence Number Wise Study of Calving Pattern

In AI sequence study in all sequence normal calving were observed in range of 76 to 78 %. Minor assistant was observed in 14 to 16.5% range. Highest dystocia cases were observed in first sequence (1.9%). While in second (1.6%) and in third (0.9%).Highest cesarian cases were noted in first sequence (0.8%). While more than 5.0% of abortion were observed in all sequence.

Table .3 AI Sequence Wise Calving Pattern

Artificial Insemination Sequence Number	Abortion	Caesarian	Dystocia	Minor Assistance	Normal	Grand Total
1	350(5.2%)	51(0.8%)	129(1.9%)	992(14.7%)	5230(77.5%)	6752
2	79(5.1%)	3(0.2%)	25(1.6%)	254(16.5%)	1183(76.6%)	1544
3	23(5.0%)	1(0.2%)	4(0.9%)	70(15.3%)	361(78.6%)	459
Grand Total	452	55	158	1316	6774	8755

In Body Typing Wise Study of Calving Pattern

Highest percentage of normal calving were observed in animals whose ribs were not exposed (83.9%). Highest percentage of minor assistance were observed in animals whose two ribs were exposed (18.5%). Highest dystocia were noted in animals whose no ribs were exposed (4.5%). Highest abortion were recorded in animals whose one rib was exposed (5.9%).

Table . 4 Body Typing Wise Calving Pattern

Body Typing	Abortion	Caesarian	Dystocia	Minor Assistance	Normal	Grand Total
No ribs exposed	54(5.2%)	6(0.6%)	47(4.5%)	60(5.8%)	868(83.9%)	1035
One rib exposed	87(5.9%)	41(2.8%)	27(1.8%)	195(13.1%)	1136(76.4%)	1486
Two ribs exposed	182(5.0%)	2(0.1%)	45(1.2%)	667(18.5%)	2711(75.2%)	3607
Three ribs exposed	129(4.9%)	6(0.2%)	39(1.5%)	394(15.0%)	2059(78.4%)	2627
Grand Total	452	55	158	1316	6774	8755

Heat Stage Wise Study of Calving Pattern

In heat stage study highest percentage of normal calving's were recorded in late heat stage animals (81.7%) followed by mid heat stage (76.9%) and (70.8%) in early heat stage. Highest minor assistance were recorded in early heat stage (20.5%) followed by mid heat stage (15.8%) and lowest in late heat stage (8.8%). Highest dystocia were observed in early heat stage (4.2%) followed by (1.9%) in mid heat stage and lowest in late heat stage (0.8%). Highest caesarean were recorded in late heat stage (3.1%) followed by (0.2%) in early heat stage and lowest in mid heat stage (0.2%). Highest abortions were recorded in late heat stage (5.6%) followed by mid heat stage (5.1%) and lowest in early heat stage (3.8%).

Table – 5 Heat Stage Wise Calving Pattern

Heat Stage	Abortion	Caesarian	Dystocia	Minor Assistance	Normal	Grand Total
Early	10 (3.8%)	2 (0.8%)	11 (4.2%)	54 (20.5%)	187 (70.8%)	264
Mid	376 (5.1%)	16 (0.2%)	138 (1.9%)	1158 (15.8%)	5623(76.9%)	7311
Late	66 (5.6%)	37 (3.1%)	9 (0.8%)	104 (8.8%)	964 (81.7%)	1180
Grand Total	452	55	158	1316	6774	8755

In Year Wise Study of Calving Pattern

Highest percentage of normal calving were observed in year 2011 (91.6%) and lowest in year 2015 (47.8%).Highest percentage of minor assistance was recorded in year 2015 (42.8%) while lowest in year 2011 (1.4%). Highest dystocia was recorded in year 2013 (2.8%) and lowest in year 2011 (0.7%). Highest abortion was recorded in year 2015 (6.9%) and lowest in year 2013 (3.8%).

Table – 6 Year Wise Calving Pattern

Calving Year	Abortion	Caesarian	Dystocia	Minor Assistance	Normal	Grand Total
2011	73 (6.1%)	2 (0.2%)	8 (0.7%)	17 (1.4%)	1093 (91.6%)	1193
2012	188 (6.0%)	15 (0.5%)	45 (1.4%)	394 (12.5%)	2507 (79.6%)	3149
2013	112 (3.8%)	35 (1.2%)	82 (2.8%)	514 (17.3%)	2230 (75.0%)	2973
2014	40 (4.6%)	2 (0.2%)	10 (1.1%)	150 (17.1%)	675 (77.0%)	877
2015	39 (6.9%)	1 (0.2%)	13 (2.3%)	241 (42.8%)	269 (47.8%)	563
Grand Total	452	55	158	1316	6774	8755

Season Wise Study of Calving Study

Highest percentage of normal calving's were recorded in summer season (80.16%) while lowest in rainy season (74.95%). Highest percentage of minor assistance was recorded in rainy season (17.29%). While lowest in summer season (11.75%). Highest percentage of dystocia was recorded in summer season (2.22%) while lowest percentage of dystocia was recorded in winter (1.23 %). Highest percentage of caesarean cases were recorded in winter season (1.09%) while

lowest in rainy season (0.28%). Highest percentage of abortions were recorded in rainy season (5.52%) while lowest in winter season (4.61%).

Table .7 Season Wise Calving Pattern

Row Labels	Abortion	Caesarian	Dystocia	Minor Assistance	Normal	Grand Total
Rainy	160(5.52%)	8(0.28%)	57(1.97%)	501(17.29%)	2172(74.95%)	2898(100%)
Summer	157(5.36%)	15(0.51%)	65(2.22%)	344(11.75%)	2347(80.16%)	2928(100%)
Winter	135(4.61%)	32(1.09%)	36(1.23%)	471(16.08%)	2255(76.99%)	2929(100%)
Grand Total	452(5.16%)	55(0.63%)	158(1.80%)	1316(15.03%)	6774(77.37%)	8775(100%)

Calf Sex Wise Study of Calving Pattern

Highest percentage of normal calving were observed in female calf born (82.3%) and while in male calves born it was (81.3%). Highest percentage of minor assistance was recorded in male calves born (16.6%) while in it was (15.2%) in female calf born study. Highest percentage of dystocia were recorded in female calves born (1.9%) while it was (1.5%) in male calves born. Percentage of abortion were (0.61%) in male calves and (0.63%) in female calves born case.

Table .8 Calf Sex Wise Calving Pattern

Sex of Calf	Caesarean	Dystocia	Minor Assistance	Normal	Grand Total
Male Calf	26(0.61%)	66(1.5%)	706(16.6%)	3463(81.3%)	4269
Female Calf	25(0.63%)	75(1.9%)	599(15.2%)	3240(82.3%)	3949

Study of Retention of Placenta

In retention of placenta study overall 32.48%(2844) cases show retention of placenta while in Central plain of Uttar Pradesh it was 22.54% in Mid -Western plain of Uttar Pradesh 36.28% and in Western plain zone of Uttar Pradesh73.48%. In parity wise study of retention of placenta were highest in third parity 39.38% while lowest in first parity 26.40% while in heifer it was 33.03%.

4. DISCUSSION

The number of calves born in the present study was 8755. Outof this 4269 was male and the rest 3949 were female and the ratio (male: female) was 52:48. Our findings are in agreement with the findings of Tesfu et al. (2014) who reported sexratio of 52:48 in dairy farms subjected to artificial insemination. In present study, the overall incidence of retained placenta was higher than reported by Pandeet al. (2014) and Gupta et al. (1999) in buffaloes. This 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. Higher incidence of retained placenta was recorded in dams with male fetuses than with female fetus. Our finding are in agreement with that of Erb et al. (1958) who reported 56% cases of retained placenta associated with birth of male calves. Moreover, retained placenta in cattle isalso associated with dystocia, abortion, short or long gestation and twinning (Bhattacharyyn et al., 2009) which also are important predisposing factor for occurrence of RFM. The reported incidence of dystocia varies widely between 2-11% (Roberts, 1984). Our study reports incidence of 1.80%which is in agreement with the findings of Sekhar and Rajani(2014) who reported 2.9% prevalence of dystokia among cross bred cows of Chittoor District of Andhra Pradesh. High incidence of dystokia was observed with female calves which might be attributable to their higher birth weight (Patil et al.,2014). The Higher occurrence of dystokia in rainy and summer season than winter in the present study may be attributed to higher number of calvings occurring in these season. The incidence of abortion (5.16%) recorded in this study is similar to the findings reported earlier by Shiferaw et al. (2003) and Kassahun (2003). This finding was also similar with the findings of Sekhar and Rajani (2014) whohave reported prevalence of 6.7% in dairy farms and at farmers in Andhra Pradesh. Satya pal (2003) reported the incidence of abortion in Karan Fries cows was significantly affected by parity, season and period and the incidence was lower during winter and it is higher during second and third lactation. In this study, incidence of dystocia was significantly affected byparity and it was higher during first lactation. Omar et al. (1975) reported that season hadno significant effect on abnormal calving. On the contrary, Singh (1979) observed seasonal variation in the incidence of abnormal calving being high in hot dry and hot humid seasons. About parity it had non-significant effect on calving abnormalities(Prabhu and Chatterjee, 1970; Sharma and Jain,1982), however, few workers (Tomar et al., 1975;Kaikini et al., 1976) did mention a significant effect. Most of the workers (Singh, 1979; Vaccaro and Vaccaro, 1981; Mukherjee et al., 1993; Satya pal,2003) documented significant effect of season oncalving abnormalities and very few (Tomar et al.,1975) reported non-significant effect.

5. CONCLUSION

The outcome of this study strongly suggest that Agro climatic Zone viz. Parity, body condition, season of calving, calf sex and retention of placenta study all these factors should be taken into consideration during calving pattern study. Greater awareness about seasonal predisposition of certain disorders may draw attention towards a proactive approach for better management.

6. Aknowledgments

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