Indian Journal of Extension Education
Vol. 54, No. 2, 2018 (261-265)

Prevalence of Reproductive Problems under different Dairy Production Systems

Diksha Patel[1*] and K. Ponnusamy[2]

ABSTRACT

The present study was conducted in Haryana, Madhya Pradesh and Chhattisgarh representing three different dairy production systems namely: dynamic, transient and subsistence dairy production systems of India respectively during 2017-18. Data were collected personally, from 30 Veterinary Officers (VO)by personal interview.Among 10 major reproductive problems of female animals, late sexual maturity with RBQ value 92 and anestrus (82) in non-descript; anestrus (94) and late sexual maturity (76) in indigenous; repeat breeding (82) and anestrus (67) in crossbred; and anestrus (94) and repeat breeding (82) in Buffalo were ranked first and second reproductive problems respectively in Haryana state. Whereas in case of Madhya Pradesh the non-descript cattle; indigenous cattle; crossbred cattle and buffalo breed were mainly affected by late sexual maturity (94) and anestrus (88); anestrus (92) and late sexual maturity (85); repeat breeding (88) and anestrus (70) and late sexual maturity (94) and anestrus (87) were ranked by respondents respectively. Late sexual maturity (78) and uterine infections (77); late sexual maturity (88) and anestrus (85); uterine infections (73) and abortion (67); late sexual maturity (90) and anestrus (83) were ranked the first and second reproductive problems in non-descript cattle; indigenous cattle; crossbred cattle and buffalo respectively in Chhattisgarh. Constraints analysis revealed that treatment of dairy animals by village-quacks was the important constraint reported by veterinary officers (V.Os) of Haryana and lack of awareness of farmers for reproductive problems of dairy animal was the most important constraint as perceived by V.Os of both Madhya Pradesh and Chhattisgarh.Sincestate-level variation could be observed in prevalence of reproductive problems as well as constraints experienced by V.Os; state centric extension plan should be prepared to reduce the prevalence of reproductive problems of animals and constraints of veterinary officers.

Keywords: Constraints, dairy production systems, rank based quotient, reproductive problems

INTRODUCTION

India accounts for more than 18.5 per cent of global milk production with an annual output of 165.4 million tonnes in 2016-17 (BAHFS, 2017). Despite India having the highest livestock population in the world with the total livestock population of 512.06 million (19th Livestock Census, 2012), the productivity of dairy animals has been extremely low as compared to developed countries. The average milk productivity of Indian dairy animals is only 1214 Kg per lactation which is nearly half of the world average of 2104 Kg per lactation (Planning Commission, 2012). The average milk productivity of crossbred cows, indigenous cows and buffaloes are only 7.51, 2.84 and 5.23 kg/day respectively (BAHFS, 2017). Breeding, feeding, health-care and management practices constitute four basic pillars of milk production in dairy farming. Out of these, breeding, in general, plays a pivotal role in producing good

[1] Subject Matter Specialist, Agricultural Extension, Krishi Vigyan Kendra, Banda, Banda University of Agriculture and Technology, Banda (U.P.) - 210001, [2] Principal Scientist, Agricultural Extension, Dairy Extension Division, ICAR-National Dairy Research Institute, Karnal (Haryana) - 132001, *pateldiksha279@gmail.com

quality germplasm and better stock replacement. Reproduction, in particular, governs theeconomic viability and profitability of dairy venture. Any impairment in the process of reproduction results inthe reproductive problems (R.P.) directly affecting dairy animals'productivity. At present reproductive problems are recognized as one of the most serious problems, affecting sustainability of the dairy production system in India. Anestrous and repeat breeding are the two major reproductive disease affecting 30-40 per cent of Indian bovines (ICAR, 2013), which significantly reduce animal productivity. Low milk yield of cows and buffalo is mainly attributed to the poor genetic potential, improper breeding management, high incidence of diseases, worm infestation and imbalance feeding (Ponnusamy and Ambasankar, 2006). The demand for milk in India is projected to increase to 191.3 MT in 2020. At the existing rate of growth in milk production, milk supply is likely to fall short of the demand in future (Kale, 2016). To fulfill the demand and supply gap, there is a need to improve the individual animal's productivity, which would need interventions at genetic, nutritional and management levels (Kumaresan, 2015).

The veterinary officers in animal husbandry sector play crucial role in providing the desired information, technology and knowledge to the farmers. However, they tend to facemany constraints while performing their activitieswhich severely affect their performance intransfer of technologies for management of reproductive problems in animals. Thus, it became important to assess the constraints experienced by veterinary officers in managing reproductive problems of dairy animals. Therefore, abetter comprehension about these reproductive problems as well as constraints experienced by VOs prevailing in different dairy production systems would help in formulating suitable extension strategies to manage these reproductive problems and prevent consequent economic losses. Keeping in view the above explained scenario the present research has been conducted with following specific objectives:

1. To assess the prevalence of reproductive problems in animals under different dairy production systems
2. To study the constraints experienced by Veterinary officers in managing reproductive problems in animals

METHODOLOGY

The present study was undertaken in Haryana, Madhya Pradesh and Chhattisgarh representing dynamic, transient and subsistence dairy production system respectively. From each selected state, two districts with highest bovine population have been selected purposively. By this process, two districts namely, Hissar and Bhiwani from Haryana, Rewa and Satna district from Madhya Pradesh and Raipur and Durgfrom Chhattisgarh, were selected purposively. Five veterinary officers (VOs) from each selected district were selected as well. So total 30 VOs were selected for the study. Data were collected through a structured schedule.

Rank based Quotient (RBQ) method was used for ranking the most prevalent reproductive problems according to response of V.Os. Various reproductive problems were ranked accordingly.

$$RBQ= [\Sigma f_i (n+1-i) / Mxn] x100$$

Where,

f_i = Number of respondents reporting a particular problem under i^{th} rank

M = Number of respondents

n = Number of reproductive problems

A list of constraints was prepared through review of recent literature and discussion with experts of related field and constraints analysis was done by weighted mean score method and ranking was also given based on value of weighted mean score.

$$\bar{X} = \frac{\sum_{i=1} X_i W_i}{\sum_i W_i}$$

where,

$\bar{X}$:weighted mean score

Xi:value of i^{th} constraint

Wi:weight of the i^{th} constraint

RESULTS AND DISCUSSION

Ranking of reproductive problems based on their prevalence by Veterinary Officers

Ten veterinary officers of each selected state rankedtenmajor reproductive problems based on their prevalence or occurrence in the study area as reported by them in past three years. The data were analyzed with Rank Based Quotient (RBQ) method and presented in Table 1 which revealed that out of 10 main reproductive problems, late sexual maturity with RBQ value 92, anestrus (82) and dystocia (66); anestrus (94), late sexual maturity (76) and repeat breeding (66); repeat breeding (82), anestrus (67) and uterine infections (65); and anestrus (94), repeat breeding (82) and dystocia (64) were ranked first, second and third reproductive problems in non-descript, indigenous cattle, crossbred and buffalo breed respectively in Haryana state. In Haryana state major animals were affected by anestrous, repeat breeding and dystocia. V.Os. expressed that farmers were identifying heat by bellowing method and often, they missed the proper heat period. Whenever there was a male calf in non-descript cattle or buffalo, there was more chances for difficult calving, as male calf was heavy in weight. The findings are line with results of Mekonnen and Moges (2016), as they have reported that birth weight is the trait most highly correlated with dystocia followed by sex of calf, pelvic area, gestation length and weight of cow.

In Madhya Pradesh, the non-descript cattle; indigenous cattle; crossbred cattle and buffalo breed were mainly affected by late sexual maturity (94), anestrus (88), repeat breeding (64); anestrus (92), late sexual maturity (85), repeat breeding (70); repeat breeding (88), anestrus (70), uterine infections (60); and late sexual maturity (94), anestrus (87), repeat breeding (73) respectively. The main reproductive problems which affected the dairy animals of Madhya Pradesh state were late sexual maturity, anestrus and repeat breeding. V.Os. have expressed the fact that the farmers were not providing balanced feed and mineral mixture to their animals, so it might be the reason for late sexual maturity or anestrous in animals.

It was reported that late sexual maturity (78), uterine infections (77) and dystocia (63); late sexual maturity (88), anestrus (85) and abortion (62); uterine

Table 1: Ranking of reproductive problems on the basis of their prevalence by veterinary officers

(n=30)

Reproductive problems	Non-descript cattle			Indigenous cattle			Crossbred cattle			Buffalo		
	Haryana	Madhya Pradesh	Chhattis-garh	Haryana	Madhya Pradesh	Chhattis-garh	Haryana	Madhya Pradesh	Chhattis-garh	Haryana	Madhya Pradesh	Chhattis-garh
Late sexual maturity	**92 (I)**	**94(1)**	**78(1)**	76 (II)	85 (II)	**88(1)**	42(VIII)	57 (V)	45 (VI)	58(IV)	**94(1)**	**90(1)**
Anestrus	82 (II)	88 (II)	41 (VII)	**94 (1)**	**92(1)**	85 (II)	67 (II)	70 (II)	40 (VII)	**94(1)**	87 (II)	83 (II)
Repeat breeding	58 (IV)	64 (III)	53 (IV)	66 (III)	70 (III)	54 (V)	**82 (I)**	**88 (I)**	50 (V)	82(II)	73 (III)	51 (IV)
Dystocia	66 (III)	49 (VI)	63 (III)	46 (VI)	46 (V)	60 (IV)	62 (V)	58 (IV)	60 (III)	64 (III)	55 (IV)	42 (VI)
Abortion	54 (V)	44 (VII)	49 (V)	42 (VIII)	43 (VI)	62 (III)	64 (IV)	51 (VI)	67 (II)	50 (V)	48 (V)	20 (IX)
Stillbirth	*26 (X)*	37 (VIII)	*21 (X)*	*32 (X)*	*36 (X)*	22 (VIII)	30 (X)	47 (VIII)	32 (IX)	44 (VI)	44 (VII)	*15 (X)*
Cystic ovary	38 (IX)	50 (V)	25 (IX)	44 (VII)	41 (VIII)	37 (VI)	52(VII)	49 (VII)	35 (VIII)	24 (X)	34 (IX)	44 (V)
Retained placenta	48 (VI)	*32 (X)*	33 (VIII)	52 (V)	39 (IX)	*20 (X)*	54 (VI)	37 (IX)	*25 (X)*	54 (VII)	*32 (X)*	53(III)
Uterine infections	44 (VII)	56 (IV)	77(II)	56 (IV)	55 (IV)	31 (VII)	65 (III)	60 (III)	**73 (I)**	34 (IX)	36 (VIII)	41 (VII)
Prolapse	42 (VIII)	36 (IX)	40 (VI)	42 (VIII)	43(VI)	21(IX)	32(IX)	*33 (X)*	53(IV)	46(VIII)	47(VI)	41(VII)

(Figures in parenthesis indicate ranks of reproductive problems in particular species, bold indicates most prevalent, italics indicate least prevalent reproductive problem)

infections (73), abortion (67) and dystocia (60); late sexual maturity (90), anestrus (83) and RFM (53) were ranked the first, second and thirdmajor reproductive problems in non-descript cattle; indigenous cattle; crossbred cattle and buffalo respectively in Chhattisgarh. These findings consistently reveal that late sexual maturity, anestrus, repeat breeding, dystocia, abortion, RFM were the major reproductive problems with varying degree of prevalence in respect of breed as well as dairy production system. Since state-level variation could also be observed therefore state centric extension plan should be prepared for promoting good dairy farming practices including breeding, feeding, health care and management to reduce the prevalence of reproductive problems and enhance the earning of farmers.

It is evident from Table 2 that treatment of dairy animals by unqualified person in the village was the most prioritized constraint among veterinary officers of Haryana with weighed mean score (4.83) followed by lack of transportation facilities with the department for treatment of animals (4.67), limited time available for treatment work due to consumption of more time for administrative work (4.5) which were also the second and third prioritized constraints of V.Os. of Haryana respectively. It might be due to fact that farmers had the perception that the village quackshave more experience and skill to handle the complicated cases. So farmers first consult

Lack of awareness of farmers about reproductive problems of dairy animals (4.83), inadequate staff strength in department (4.5) and inadequate supply of quality medicines to veterinary institutions (4.33) were the major constraints as perceived by veterinary officers of Madhya Pradesh in order of importance to manage reproductive problems in dairy animals. In case of Chhattisgarh,lack of awareness of farmers for reproductive problems of dairy animals (5), treatment of dairy animals by village-quacks (4.83) and inadequate supply of quality medicines to veterinary institutions (4.67) were found to be the majorconstraints among veterinary officers of Chhattisgarh. V.Os. of bothMadhya Pradesh and Chhattisgarh reported that farmers lacked awareness about various reproductive problems, their causes and interrelation. Therefore, there is need to organise more

Table 2: Constraints reported by Veterinary officers in managing reproductive problems in dairy animals

Constraints	Haryana (n=10)		Madhya Pradesh (n=10)		Chhattisgarh (n=10)	
	Weighted Mean	Rank	Weighted Mean	Rank	Weighted Mean	Rank
Lack of awareness of farmers about reproductive problems of dairy animals	4.33	IV	4.83	I	5	I
Lack of transportation facilities with department for treatment of animals	4.67	II	3.83	VIII	3.5	VIII
Area of jurisdiction per field extension functionary is very large	3.67	VI	3.5	IX	4	IV
Inadequate staff strength in department	4	V	4.5	II	4	IV
Limited time available for treatment work due to consumption of more time for administrative work	4.5	III	3.5	IX	3.33	X
Lack of skilled para-veterinary staff engaged in A.I. and diagnosis of different reproductive problems	3.33	IX	4.17	IV	3.5	VIII
Lack of Pedigree bulls for natural services	3.5	VIII	4	VI	3.67	VI
Treatment of dairy animals by unqualified person in the village (village-quacks)	4.83	I	4.17	IV	4.83	II
Inadequate supply of quality medicines to veterinary institutions	2	X	4.33	III	4.67	III
Difficulty in motivation of farmers for adoption of scientific dairy farming practices despite several efforts	3.67	VII	4	VI	3.67	VI

village quack or para-vet and when case becomes too complicated, they approach the V.O.s so it was the main difficulty in handling such complicated cases. This warrants skill training to be organised for rural youth and enable them to handle the sick animals as per the norms of Veterinary Council of India (VCI).

awareness campaign, veterinary health camps, training and demonstrations for making farmers well aware about the causes, symptoms and interrelation of various reproductive problems (Ponnusamy and Pachaiyappan, 2018). It is also important to promote use of ICTtools including recently developed mobile apps, videos, expert systems, voice messaging for educating the farmers to adopt good dairy farming practices in order to enhance the farm efficiency and profitability.

CONCLUSIONS

Late sexual maturity and anestrus were ranked as first and second major reproductive problems among the non-descript cattle, indigenous cattle and buffalo Haryana, Madhya Pradesh and Chhattisgarh., Therefore, farmers should be educatedon the importance of balance feeding and feeding of mineral mixture to the animals for early onset of estrus as well as post-partum estrus. There wasvarying level of prevalence of various reproductive problems in female animals in respect of breed as well as dairy production system. Since state-level variation could also be observed, therefore the policymakers of concerned state animal husbandry department can prepare state centric extension plan to reduce the prevalence of reproductive problems in animals.Since V.Os.of Madhya Pradesh and Chhattisgarh expressed that farmers lacked awareness about various reproductive problems, their causes and interrelation,there is need to organise more awareness campaign, veterinary health camps and training for making farmers well aware about the causes, symptoms and interrelation of these reproductive problems for minimizing the veterinary expenses and maximizing the reproductive efficiency of dairy animals.

Paper received on : June 09, 2018
Accepted on : June 26, 2018

REFERENCES

19th Livestock Census. (2012). Department of Animal husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Government of India, New Delhi.

BAHF. (2017). Basic Animal Husbandry & Fisheries Statistics. Department of Animal Husbandry Dairying and Fisheries. Ministry of Agriculture and Farmers Welfare. The Governmentof India. New Delhi.

ICAR. (2013). *Handbook of Animal Husbandry,* Fourth edition. Indian Council of Agricultural Research (ICAR), New Delhi: 506 pp.

Kale, R. B., Ponnusamy, K., Chakravarty, A. K., Sendhil, R. and Mohammad, A. (2016). Assessing resource and infrastructure disparities to strengthen Indian dairy sector. *Indian Journal of Animal Sciences*, 86(6), 720-725.

Kumaresan, A., Srivastava, A.K., Mohanty, T.K. and Prashad, S. (2012). *Reproductive disorders and their management in dairy cattle and buffalo.*Book by Livestock Production and Management in NDRI.

Mekonnen, M. and Moges, N., (2016). A Review on Dystocia in Cows. *European Journal of Biological Sciences*, 8(3), 91-100.

Planning Commission. (2012). Report of working group on Animal Husbandry and Dairying (2007-2012). 11th Five Year Plan, Planning Commission, Government of India, New Delhi.

Ponnusamy, K and Ambasankar, K. (2006). Technological intervention for socio-economic enrichment of dairy farmers. *Indian Journal of Dairy Science*, 59 (1), 33-36.

Ponnusamy, K., and Pachaiyappan, K. (2018). Strengthening extension research in animal husbandry: review of issues and strategies. *Indian Journal of Animal Sciences,* 88 (2), 137-143.