RESEARCH NOTE

Artificial Insemination for Dairy Development in Ranchi District of Jharkhand

Kumari Shweta

Touring Veterinary Officer, State Animal Husbandry Department, Bihar.

Corresponding author e-mail: bulbul.shweta@gmail.com

ABSTRACT

A study was envisaged to evaluate the prevailing breeding system in Ranchi district of Jharkhand. The data was collected through pre-structured interview schedule in the year 2009. The study revealed that both public (D.A.H.) and private (BAIF) sectors are providing artificial insemination services to the dairy owners to develop dairy industry in Jharkhand. The number of A.I. as well as coverage of breedable bovines through A.I. by D.A.H. (834 and 2.28 per cent) was low in comparison to BAIF centres (2135 and 37.16 per cent). Dairy owners express their higher satisfaction with A.I. performance of BAIF due to availability of good quality semen at their doorsteps.

Keywords: *Artificial Insemination, Farmer's opinion*

Jharkhand has a population of 76.59 lakh cattle and 13.43 lakh buffalo (*Basic Animal Husbandry Statistics, 2006*). Despite having huge cattle and buffalo population the availability of milk in the state is 140 gm per person against a national average of 235 gm. Milk production per animal in the state is only 1.59 litres against a national average of 3.0 litres. The low productivity of animals is mainly due to their non-descript nature. The populations of cross breed animals are very poor. Among cattle, 1.31 lakh are crossbred cattle, out of which around 77 thousand are of Jersey crossbred. The state has a population of Murrah buffaloes of about 31 thousand (*Arundhati Singh, 2006*). Cross breeding is not widely accepted due to lack of proper breeding strategy, non-adoption of A.I. due to inadequate availability of A.I. services. Realizing these problems and the opportunities available to convert this liability into an asset the Department of Animal Husbandry and Fisheries (D.A.H), Jharkhand has signed an MoU with Bhartiya Agro Industries Foundation (BAIF) on 6th June, 2005. The present study was undertaken to analyze the prevailing breeding programme and to obtain the opinion of dairy farmers about this system.

METHODOLOGY

The study was conducted in purposively selected 12 villages, coming under four blocks of Ranchi district. Ten farmers from each village and thus a total of 120 farmers were selected to get their opinion about the existing system of input delivery. Besides 120 farmers, fifteen officials from D.A.H and six officials of BAIF working in the study were selected as respondents to analyze the existing breeding system. The primary data was collected using an interview schedule by personal interview method and the secondary data from official record to understand the existing breeding system of input delivery. The data thus collected were coded, compiled, tabulated and subjected to frequency, percentage and subjected to χ^2 test and independent t-test to draw meaningful conclusions.

(i) χ^2 test : χ^2 value was calculated with the help of following formula:

$$X^2 = \sum[\frac{(O-E)^2}{E}]$$

Where,

O = Observed

E = Expected

(ii) Independent t-test : t-value was calculated with the following formula

$$t = \frac{\bar{X} - M_o}{S.E(\bar{X})}$$

Where,

$\bar{X}$ = Sample mean

Mo = Specified mean

$S.E(\bar{X})$ = Standard error of sample mean

RESULTS AND DISCUSSION

Existing breeding system : The D.A.H was providing semen of pure Holstein Friesien (H.F.), Jersey, Tharparkar, Red Sindhi and cross of Sahiwal with H.F. and Jersey with Sahiwal cattle and Murrah buffalo by charging Rs. 20/- per A.I. of cow and buffalo. Whereas, BAIF was providing frozen semen through Dairy Cattle Development Centres (DCDCs) by charging Rs. 20/- for indigenous cattle (Sahiwal) semen, Rs. 40/- for either buffalo (Murrah) or exotic bull semen (Pure H.F. and Jersey and Cross of H.F. and Jersey) and Rs. 80/- for progeny tested bulls (H.F. and Jersey) semen.

Table 1 reveals that on an average, each DCDC had performed 1068 A.I. per year which was significantly better than the D.A.H that performed only 201 A.I. The coverage under A.I. programme was quite dismal by D.A.H whereas, this programme was running significantly more successfully by BAIF covering 37 per cent of total breedable bovine population per centre.

The number of calves born, through A.I., per centre was significantly higher for BAIF (349) than D.A.H (80). The conception rate was reported 64 per cent and 58 per cent under D.A.H and BAIF respectively without significant difference. The number of insemination per conception was significantly higher for BAIF as compared to D.A.H due to better technical skill of D.A.H staff but the calving percentage showed significantly better pictures in the BAIF study area (57 %) as compared to D.A.H study area (47.9%) .

The conception rate, number of insemination per conception and percentage of calves born in the study area under D.A.H and BAIF (Table 1) were revealing better picture as compared to the figures reported by *Agarwal et al. (2007)* but almost same as reported by *Paul et al. (2011)* and *Bhattacharyya et al. (2010).*

Table 1 : A. I. performance of D.A.H and BAIF

Particulars	DAH	BAIF	χ^2 value
Number of A.I. done per A.I. centre / DCDC per year	201	1068	26.33**
Percentage of breedable bovines covered through A.I. (%)	02.3	37.0	38.13**
Number of calves born per A.I. centre / DCDC per year	80.0	349	3.84*
Conception rate (%)	64.0	58.0	0.75NS
Number of insemination per conception	01.11	1.74	03.4*
Calving percentage (%)	47.9	57.0	04.80*

* P<0.05, ** P<0.01

Farmers' opinion about the existing breeding system

Frozen semen: Table 2 reveals that 46.67 per cent respondents in DAH study area had never used frozen semen and 53.33 per cent have opined that frozen semen was not available always at the centres. The reaction of respondents on the quality of the semen was diverse. 50.0 per cent respondents opined that the quality was either good or average. About 3.33 per cent respondents rated the quality of frozen semen as poor. The problem with frozen semen in the study area was more of supply rather than quality. Simultaneously 90.0 per cent respondents in BAIF study area opined always availability of frozen semen at the centre. All the respondents expressed their opinion that the quality of the semen was good. Thus in farmer's opinion BAIF supplied frozen semen with significantly greater availability and good quality than D.A.H.

Artificial insemination services : Table 3 showed that

Table 2 : Farmers' opinion on frozen semen

Parameters	Study area under		χ^2 value
	DAH (%)	BAIF (%)	
Availability			97.981**
Always available	0.00	90.00	
Not always available	53.33	10.00	
Never used	46.67	0.00	
Quality			88.648**
Good	16.67	100.00	
Average	33.33	0.00	
Poor	3.33	0.00	
Not utilized	46.67	0.00	

** P<0.01

about 35.00 per cent respondents of D.A.H. study area felt that the services were not available to them regularly. The quality of the services was rated as good by 10.00 per cent, average by about 32.00 per cent, poor by about 12.00 per cent respondents and about 47 per cent respondents never utilized the A.I. services. The price per A.I. was felt as moderate by about 8.00 per cent, high by about 10.00 per cent respondents, and 35 per cent felt that the charges for A.I. was minimal but the biggest problem was its non-availability or irregular supply. The findings are in the line of reporting made by *Umar*

Table 3 : Farmers' opinion about the A.I. services rendered by DAH and BAIF personnel

Parameters	Study area under		χ^2 value
	DAH (%)	BAIF (%)	
Frequency of availability			88.648**
Regular	18.33	91.67	
Irregular	35.00	8.33	
Not utilized	46.67	0.00	
Quality			118.64**
Good	10.00	100.00	
Average	31.67	0.00	
Poor	11.67	0.00	
Not utilized	46.67	0.00	
Price			43.911**
Moderate	8.33	28.33	
High	10.00	6.67	
Minimal	35.00	65.00	
Not utilized	46.67	0.00	

** P<0.01

et. al. (2011) who stated ill equipped A.I. services as major constraints with respect to breeding.

About 92.00 per cent respondents of BAIF study area felt that the services were regularly available to them. The quality of the services was rated as good by all the respondents. The price of A.I. was felt as minimal by 65.00 per cent respondents, moderate by 28.00 per cent and high by 7.00 per cent respondents. Thus in farmer's opinion A.I. services rendered by BAIF personnel was significantly regularly available with good quality at minimal price than rendered by D.A.H.

CONCLUSION

The motto with which A.I. services were provided to the dairy farmers in Jharkhand for dairy development has started giving its impact such as the number of A.I. performed had just doubled. The number of A.I. done per centre per year, percentage of breedable bovines covered through A.I., the number of calves born per centre per year and calving percentage in the study area under BAIF showed significantly better picture than in the D.A.H study area. On the other hand dairy owners opined that BAIF was providing significantly good quality semen with greater availability and regular A.I. services with good quality at minimal price than D.A.H.

Paper received on : January 01, 2012
Received after revision : 18 September 2013
Accepted on : October 13, 2013

REFERENCES

Agarwal, S.B.; Singh, C.B. and Jha, S.K. (2007). Constraints in adoption of crossbreeding technology in different regions of *India. Indian J. Dairy Sci.*, **60** (5): 361-363.

Basic Animal Husbandry Statistics, 2006.

Bhattacharyya, H.K.; Fazili, M.R.; Khan, I. and Bhat, F.A. (2010). Fertility status of artificially inseminated crossbred cows of Kashmir Valley. *Asian J. Ani. Sci.*, **4**: 56-63.

Paul, A.K.,; Alam, M.G.S. and Shamsuddin, M. (2011). Factors that limit first pregnancy rate in cows at char management of Bangladesh. *Livestock Res. for Rural Development.* **23** (3): 230. www.lrrd.org/lrrd23/3/paul23057.htm

Singh, Arundhati. (2006). Contents 17th Livestock Census All India Breedwise Report, New Delhi, July 2006.

Umar, J.; Kumar, B. and Kumar, S. (2011). Constraints perceived by farmers in adopting scientific dairy farming practices in Madhubani district of Bihar. *Res. J. Agril. Sci.*, **2** (1): 142-145.

• • • • •