ADOPTION PROCESS OF ARTIFICIAL INSEMINATION IN BUFFALOES

V. B. Dixit[1], A. Bharadwaj[2], R. K. Sharma[3] and R. K. Sethi[4]

ABSTRACT

The study was conducted in four adopted villages of Central Institute for Research on Buffaloes and 200 respondents constituted the study sample. It was observed that due to concerted efforts of the institute a sizable proportion of respondents were having favourable opinion about artificial insemination (AI) in buffaloes and about 80 per cent respondents selected for the study had gone for artificial insemination at least once. The study revealed that 55 per cent respondents continued adoption of AI for second and third time while 45 per cent discontinued the practice after availing the facility only once. Data collected on some related issues of artificial insemination indicated that majority of the respondents (63%) waited for bellowing before buffalo was taken for AI. It was also found that majority of respondents were not sure about the right time of artificial insemination. Large per cent of the respondents were of the opinion that the practice was very effective for breed improvement. Regarding problems associated with AI, it was felt by 43 per cent respondents that conception rate achieved through AI was very low. Caste, family education and herd size were positively and significantly associated with the adoption of AI.

Key words : *Buffalo; Adoption of AI*

INTRODUCTION

Buffalo rearing in India, particularly for dairy purposes, is generally taken up by the small farmers as a subsidiary occupation. The production of milk is not commensurate with the expenditure incurred because of low productivity of Indian livestock. This is mainly attributed to the scarcity of progeny tested bulls and comparatively less preference to artificial insemination (AI). In Haryana, sizable proportion of respondents still prefer bulls for natural service and only about 20 per cent buffaloes are covered through artificial insemination. Though, there may be large number of farmers who have gone for AI at least once, but the number of respondents who continuously adopt the technique after availing the facility once, is very low. Therefore, it was considered imperative to undertake the appraisal of adoption process of the practice in the adopted villages of Central Institute for Research on Buffaloes (CIRB), with the specific objectives to examine different issues associated with the adoption of artificial insemination; to understand the adoption stages of respondents of artificial insemination in buffaloes; and to find out the association of adoption of artificial insemination with independent variables.

METHODOLOGY

The study was purposively conducted in the four adopted villages of Central Institute for Research on Buffaloes' and 50 farmers were selected from each village randomly. Thus, 200 respondents constituted the study sample. The independent variables like age, education, family education, caste, land holding size (LHS) and buffalo herd size were classified into three groups on the basis of mean scores. With regard to measurement of adoption of artificial insemination,

1,2 &3. Sr. Scientist, 4. Principal Scientist, CIRB, Hisar-125 001

any farmer who availed the services of artificial insemination even once was considered as the adopter of the technology.

RESULTS AND DISCUSSION

The profile of respondents was studied with regard to six independent variables and data is presented in Table 1. Average age of respondents selected under study was 45.4 years. Majority of the respondents (55%) belonged to middle age group. Most of them (65%) possessed low to medium education. About 45 per cent respondents belonged to high caste while the remaining was from low to medium categories. A sizable proportion (80%) of respondents were having small to medium land holding size. More than half of the respondents possessed on an average 3-5 buffaloes. The interrelationship between the independent variables of respondents under study is shown in Table 2. It is evident from the table that education was negatively associated with age while family education had positive correlation with age of the respondents. This implies that old respondents had low level of education. It is logical also as the younger generation is comparatively more educated. With regard to family education the trend was however, opposite. Caste had positive association with education and herd size. Issues related to adoption of artificial insemination were examined and the findings are discussed as under:

(i) Perception about artificial insemination : Perception is the process of interpretation of information or stimuli received from the environment through the sense organs like eyes and ears. These perceptions may play an important role in decision making of the farmers. Therefore, it was considered imperative to study the perception of farmers with regard to AI and the results are presented in table 3. It is apparent from the table that 91 per cent farmers considered it 'useful' to 'highly useful'

and the remaining 9 per cent found the practice either not so useful or 'not at all useful'. The data were further subjected to analysis of variance to determine the differences in the opinion of farmers and significant difference in the opinion of farmers in the four adopted villages was observed. Duncan's multiple range test indicated that the village where it was started first had significantly better opinion in comparison to other villages. It was perhaps due to the reason that institute's scientist used this opportunity of their contact with farmers to influence their attitude towards the practice when they visited the centres.

Table 1. Socio economic profile of respondents.

Variables	Categories	Frequency	% age
Age	Up to 35 yrs	75	37.5
	36-50 yrs	110	55.0
	> 50 yrs	15	7.5
Education	Up to Primary	76	38.0
	High School	54	27.0
	Above High School	70	35.0
Family Education	Low	57	28.5
	Medium	110	55.0
	High	33	16.5
Caste	Low	62	31.0
	Medium	48	24.0
	High	90	45.0
Land Holding	Size0-5 Acres	113	56.5
	5-10 Acres	47	23.5
	>10 Acres	40	20.0
Herd Size	1-2 Buffaloes	86	43.0
	3-5 Buffaloes	102	51.0
	>5 Buffaloes	12	6.0

Table 2. Intercorelational matrix of independent variables of respondents.

Variables	1	2	3	4	5	6
Age	1.00					
Caste	.06	1.00				
Education	-.47*	.26*	1.00			
Family Education	.46*	.17	.01	1.00		
Land Holding Size	.15	.10	-.05	.10	1.00	
Herd Size	.18	.28*	-.06	.17	.13	1.00

* Significant at 0.05 level of probability

(ii) Time of insemination : Right time of insemination is vital for success of this technology in buffaloes. Therefore, it was considered relevant to find out whether the farmers knew when to get their buffaloes inseminated. Majority of the respondents (63%) waited for bellowing before the buffalo was taken for AI (Table 4). When asked to report the right time of insemination, the respondents gave different replies (Table 5). It was found that 33 per cent buffalo owners were of the view that buffalo should be taken for AI within 12 hours of onset of heat, while 38 per cent said that it should be between 12 to 20 hours. Other respondents, 25 and 5 per cent thought that it was between 20 to 30 and more than 30 hours, respectively. Bhardwaj *et al.* (2003) reported that more than 60 per cent respondents inseminate their buffaloes in early heat while 31 per cent respondents inseminate their animals in mid heat. Only 8 per cent farmers inseminate their buffaloes in late heat. Dubey and

Singh (1976) observed that 83 per cent farmers were not aware of heat cycle and 73 per cent respondents had no knowledge about the right time of insemination.

Table 3. Perception of respondents about artificial insemination

	Name of adopted villages					
Opinion	Dhiktana	Juglan	Kheri	Durjanpur	Overall	%age
Highly useful	17	22	18	9	66	33
Very useful	27	22	18	11	78	39
Useful	5	4	11	18	38	19
Not so useful	1	2	3	8	14	7
Not at all useful	0	0	0	4	4	2
Total	50	50	50	50	200	100

Table 4. Perception of respondents about when to take buffalo for artificial insemination

When AI should be done	Frequency	Percent
Immediately after mucus discharge	26	13
One to two days after mucus discharge	48	24
Wait for bellowing	126	63
Total	200	100

Table 5. Perception of respondents about right time of insemination in buffaloes

Right time for AI	Frequency	Percent
Within 12 hrs of onset of heat	66	33
Between 12 to 20 hrs	76	38
Between 20 to 30 hrs	48	24
After 30 hrs	10	5
Total	200	100

Table 6. Perception of respondents about advantages of artificial insemination in buffaloes

Advantages	Frequency	Percent
Milk production increases in progenies	82	41
Breed can be improved	96	48
Spread of diseases can be checked	18	9
Cost is less	4	2
Total	200	100

(iii) Advantages and problems in adoption of artificial insemination : Adoption studies confirmed that farmers usually compare the new technology with traditional or existing technology on same parameters. It was, therefore, endeavoured to collect data on this dimension and the results are shown in Table 6. Majority (89%) of the respondents was of the opinion that through this process, increase in milk production in next generation and breed improvement was possible. In response to their perception regarding problems associated with the technique, it was mentioned by 43 per cent respondents that conception rate ach ieved through this practice was very less and 28 per cent respondents were of the view that AI was preferred in troublesome animals only (Table 7). The remaining 15 per cent were of the view that it can cause injury to the animals and rest 14 per cent opined that the facility was not available round the clock.

(iv) Adoption stages of respondents with regard to AI : The study also examined different adoption stages of the practices of artificial insemination among farmers of adopted villages

and responses of farmers are shown in table 8. It is evident from the table that due to extension contact, 94 per cent respondents had knowledge about AI and about 90 per cent respondents were at persuasion stage in the area under study. This means that they were ready to use the practice at the earliest. Due to perhaps this reason, about 80 per cent respondents decided to use it at one or the other point of time. It was further observed that 55 per cent respondents continued its adoption while 45 per cent discontinued it and 20 per cent respondents rejected artificial insemination outrightly. Tomar (1978) attributed that non adoption of AI was due to ignorance of people about the genetic concept of animals, when fed up with natural service only then they brought animals for AI. Sawant and Dhole (1978) found inaccessibility of AI centres and high charge of fee for AI in Maharashtra State for non adoption of this practice. Balasubramaniam and John Knight (1982) and Narayan and Honnappa (1987) in their studies found that poor results from AI is one of the most important constraint in the adoption of AI. Lack of trained inseminator, quality semen, ignorance about AI, more distance from AI centres, lack of interest by AI staff, more convenience in natural services were the other reasons attributed to the non adoption of AI in Haryana (Bhardwaj *et al.*, 2003). Therefore, due to these reasons farmers may not continue to adopt AI or reject AI after initial adoption.

Table 7. Perception of respondents about problems of artificial insemination

Problems	Frequency	Percent
Conception rate is very less	86	43
Facility not available round the clock	28	14
There is an injury to animal	30	15
AI preferred only in troublesome animals	56	28
Total	200	100

(v) Association between adoption of AI and independent variable : To examine the relationship of some independent variables with adoption of AI the data were subjected to correlational analysis and the results are discussed in Table 9. It is obvious from the table that caste, family education and herd size were positively and significantly associated with the adoption of artificial insemination. It implies that farmers belonging to higher castes, having better family education and larger herd adopted the practice more frequently in comparison to others. The findings of the study are in line with the contentions of Meena (1987) reported that higher castes had comparatively more adoption of cattle and buffalo breeding practices.

Table 8. Classification of respondents according to their stage of adoption of artificial insemination

Stage	Frequency	Percent
Knowledge stage	188	94
Persuasion stage	180	90
Adoption stage	160	80
Rejected out rightly	40	20
Adopters who continued the practice next year	110	55
Adopters but discontinued	90	45

Table 9. Association of respondents' background profiles with adoption of artificial insemination

Variables	Correlation coefficient
Age	0.15
Caste	0.57*
Education	0.23
Family Education	0.90*
Land Holding Size	0.16
Herd Size	0.45*

* Significant at 0.05 level of probability

CONCLUSION

Vital information on AI such as symptoms of heat, right time of insemination, advantage of AI, causes of repeat breeding may be prepared in simple language to facilitate the farmers. Based on needs, suitable short duration training programmes could be organized which go a long way in improving the knowledge of dairy farmers. The dairy farmers as important actors in the development of animal husbandry must be involved right from the planning to the evaluation through implementation. It is essential to appreciate and recognize the perception and priorities of the farmers before contemplating development programmes.

REFERENCES

1. Balasubramaniam, R. and John Knight, A. (1982). Bottlenecks in modern dairying. *Indian J. of Extension Education* 18 (1&2): 102-105.
2. Bhardwaj, S. R., Bharadwaj, A. and Dixit, V. B. (2003). Adoption of buffalo husbandry practices by the members and non member of dairy milk cooperative societies in Haryana. *Indian Buffalo Journal* 1 (2): 103-108.
3. Dubey, V. K. and Singh, S. B. (1976). What owners know of cross-bred cows and how much about their scientific upkeep? *Indian Dairyman* 28 (3): 101-104.
4. Meena, R. P. (1993). *A study of dairy farming practices towards cross breeding of cattle and constraints involved therein*. M.Sc. (Ag.) Thesis, Sukhadia University, Udaipur.
5. Narayan, K. and Honnappa, T. G. (1987). Conception rate and the prevalence of repeat service in the dairy cattle of farms and rural areas. *Indian Journal of Animal Sciences* 57 (2): 114-118.
6. Sawant, G. K. and Dhole, P. T. (1978). Extent of adoption of cross-breeding in cattle by the dairy farmers and problems faced by them in Ahmednagar district (Maharashtra). *Indian Dairyman* 30 (12): 825-827.
7. Tomar, N. S. (1978). Problems and prospects of A.I. under field condition. Proceedings of 7th North-West Indian Dairy Husbandry Workshop, 7-8 Nov, NDRI, Karnal.