Adoption of Dairy Farmers Regarding Breeding and Management Practices of Buffalo Husbandry

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ABSTRACT

The study was conducted on 240 buffalo owners selected from eight villages of Haryana state to find out the adoption of buffalo owners regarding breeding and management practices of buffalo husbandry. The study reveals that respondents of all categories possessed medium level of adoption about breeding and management practices ranging from 45.00 to 57.00 percent followed by poor and highest adoption level respectively. The higher adoption was recorded in AI services, watching on oestrous cycle and importance of ventilated animal sheds by the respondents of each category. While they had never taken care of artificial nurturing of newly born calfs. Results also indicated that all the independent variables were having highly significant and positive relationship except age which has negative significant correlation with extent of adoption of breeding and management practices.

India possesses about 56.8 percent (97.10 million) of the World's buffalo population and is also a homeland for the best milk breed of buffalos in the world. Buffalo contributes more than 55 percent to the total 68 million metric tones of the milk produced in the country. That may be the reason it is rightly called as the "bearer cheque" of the rural folk (Chand et a1., 2006). Buffaloes are considered more useful not for quality butter and ghee but also for reasons such as higher fat component in milk, ability to utilize agriculture by-produce and require less amount of Kilocalories to produce one kilogram milk. Although the economic contribution of livestock seems to be quite substantial in the agricultural economy as well as in the national economy, the farmers who rare buffaloes are yet ignorant of scientific breeding and management practices. If these practices fit in the proper operation, it would be possible to enhance the level of milk production (Meena et al., 2007).

Considering the vitality of above stated facts, the present study was carried out with the following objectives:-

1. To determine the extent of adoption of buffalo owners about breeding and management practices of buffalo husbandry.

2. To establish between personality traits of dairy farmers and their adoption of breeding and management practices.

3. To work out the contribution of independent variables towards adoption of breeding and management practices.

METHODOLOGY

The study was conducted in four selected districts viz., Kaithal, Sonipat, Faridabad and Jind of Haryana state. One block from each selected district and two villages from each selected block were selected randomly. A dairy farmer has been defined as one who is rearing atleast one milch buffalo. Three categories of the dairy farmers were prepared on the basis of land holdings, namely landless labourers, dairy farmers having land up

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to 2 ha and buffalo owners having more than 2 ha of land. A separate list of all the three categories of dairy farmers was prepared for each selected villages and 30 respondents were selected by using proportional size of sampling techniques. Therefore, the total sample size for this study was 240 dairy farmers. The data were collected through well structured pre-tested interview schedule during 2004-05.

The term adoption has been operationalized as the practices recommended by scientists after through research for the benefit or buffalo owners. Whether the dairy farmers arc using these technologies over a period of time at the farm or not ? For the measurement or adoption of recommended breeding and management practices of buffalo husbandry, a structured interview schedule was developed. All the major components or breeding and management aspects related to buffalo husbandry were included in the interview schedule.

The respondents were asked to give their opinion about adoption/use of these technologies on three points continuum i.e. always, some times and never and the scores 2,1 and 0 were allotted, respectively. The respondents-wise and area-wise adoption scores were calculated. The dairy farmers of different categories were grouped into three categories low, medium and high adoption categories using the mean and standard deviation.

RESULTS AND DISCUSSION

Adoption level of dairy farmers about breeding and management practices

Breeding practices

It is clear from the data given in Table 1 that majority (49.47%) of landless families had medium level of adoption in respect of breeding practices followed by low (34.74%) and high (15.79%). Whereas 50.48 per

cent of the respondents having upto 2ha of land had medium level of adoption while 36.19 and 13.33 per cent of the respondents possessed low and high level of adoption of breeding practices, respectively. Similarly 50.00 per cent of buffalo owners having more than 2 ha of land possessed medium level of adoption and 32.50 per cent of them had low level of adoption whereas only 17.50 per cent of them reported to have high level of adoption regarding to breeding practices. When the data were analyzed keeping the entire population as one sample results further showed that half of respondents (50.00%) possessed medium level of adoption, whereas, 35.00 and 15 per cent of dairy farmers were reported to have low and high level of adoption of. breeding practices. Similar findings were reported by Singh (1987).

Management practices

The information given in Table 1 highlight that as high as 54.74 per cent of landless respondents had medium level of adoption of management practices followed by low (28.42%) and high (16.84%). On the other hand, in case of respondents having upto 2 ha of land, 57.14 per cent of them had medium adoption of management practices, while 24.76 and 18.10 per cent of dairy farmers were having low and high level of adoption. It was round that 45.00 per cent of the total respondents having more than 2 ha of land had medium level of adoption of management practices, while 40.00 and 15.00 per cent of buffalo owners had low and high level of adoption with regard to management practices, respectively.

The pooled analysis reveals that the majority of the respondents (54.17%) had medium level of adoption followed by low (28.75%) and high (17.08%) adoption of management practices, respectively. These findings are in accordance with the findings of Sohi and Kherde (1980) and Singh (1987).

Table 1. Adoption level of dairy farmers about Breeding and management practices of buffalo husbandry

Aspects	Category	Landless (N=95)		Upto 2 ha (N= 105)		More than 2 ha (N= 40)		Overall adoption (N=240)	
		Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**
Breeding	Low	33	34.74	38	36.19	13	32.50	84	35.00
	Medium	47	49.47	53	50.48	20	50.00	120	50.00
	High	15	15.79	14	13.33	7	17.50	36	15.00
Management	Low	27	28.42	26	24.76	16	40.00	69	28.75
	Medium	52	54.74	60	57.14	18	45.00	130	54.17
	High	16	16.84	19	18.10	6	15.00	41	17.08

Item–wise adoption of breeding and management practices among dairy farmers

Breeding practices

It is evident from the Table 2 that out of seven items included in adoption of breeding practices, in case of landless labourers, appropriate period of A.I. after calving got the highest mean adoption score (1.02) and occupied first rank. It implies that 51 percent of the respondents had fully adopted this practice. The second and third positions were occupied by watching on oestrous cycle and heat symptoms with mean adoption score of 0.80 and adoption of A.I. practice (0.76), respectively. Similarly pregnancy diagnosis (0.65) and right time of A.I. after heat (0.58) were occupied the fourth and fifth positions, respectively. Poor adoption was observed in case of checking the buffalo during pregnancy and help taken from veterinarian during pasturation to the extent of mean adoption scores of 0.41 and 0.54, respectively. It reveals that only 20.5 and 27.0 percent of the farmers adopted these practices. Almost similar trend with slight variation was found in case of the respondents having upto 2 ha of land regarding the adoption of breeding practices as in that of landless respondents.

Whereas in case of the respondents belonging to the group having more than 2 ha of land, the first position was also occupied by appropriate period of A.I. after calving (1.40) and 2nd rank was jointly occupied by

pregnancy diagnosis and help taken from veterinarian during parturition (0.95). This implies that 70 per cent of the respondents of this category had adopted the recommendations of A.I. after calving and about 42.5 per cent have taken help from veterinarian during parturition.

The analysis of the overall adoption of 240 respondents regarding breeding practices reveals that the first rank was again given to appropriate period of A.I. after calving with mean adoption score of 1.15. While adoption of A.I practices and watching on oestrous cycle and heat symptoms were jointly obtained 2nd rank with mean adoption score of 0.90. Pregnancy diagnosis (0.83), help taken from veterinarian during parturition (0.71) and right time of A.I after heat (0.68) were awarded 3rd, 4th and 5th ranks, respectively. While poor adoption was observed about checking of buffalo during pregnancy as reflected by 0.54 mean.

The above mentioned finding reveals that in case of appropriate period of A.I and watching on oestrous cycle by the respondents of each category may be due to the fact that the respondents have more knowledge about these practices because these practices arc very essential in buffalo rearing. Poor adoption in case of pregnancy checking in buffaloes was observed among the respondents because in some cases farmers even do not allow to touch the reproductive organs of his buffaloes due to their Ignorance about these practices.

Table 2. Item-wise adoption of breeding practices among dairy farmers

Sl. No.	Adoption areas	Landless(N= 95)			Upto 2 ha (N=105)			More than 2 ha (N= 40)			Overall (N=240)		
		Total adoption score	Mean score	Rank order	Total adoption score	Mean score	Rank order	Total adoption score	Mean score	Rank order	Total adoption score	Mean score	Rank order
1.	Adoption of A.I. practices	72	0.76	III	110	1.05	II	34	0.85	IV	216	0.90	II
2.	Watching on oestrous cycle and heart symptoms	76	0.80	II	103	0.98	III	37	0.93	III	216	0.90	II
3.	Pregnancy diagnosis	62	0.65	IV	98	0.93	IV	38	0.95	II	198	0.83	III
4.	Help taken from veterinarian during parturition	51	0.54	VI	82	0.78	V	38	0.95	II	171	0.71	IV
5.	Appropriate period of A.I. after calving	97	1.02	I	123	1.17	I	56	1.40	I	276	1.15	I
6.	Right time of A.I. After heat	55	0.58	V	78	0.74	VI	29	0.73	V	161	0.68	V
7.	Checking of Buffalo during pregnancy	39	0.41	VII	64	0.61	VII	28	0.70	VI	131	0.54	VI

Table 3. Item-wise adoption of management practices among dairy farmers

Sl. No.	Adoption areas	Landless(n= 95)			Upto 2 ha (n=105)			More than 2 ha (n= 40)			Overall (N=240)		
		Total adoption score	Mean score	Rank order	Total adoption score	Mean score	Rank order	Total adoption score	Mean score	Rank order	Total adoption score	Mean score	Rank order
1.	Adequate open space for the buffalo	151	1.59	II	154	1.47	IV	75	1.88	II	380	1.58	III
2.	Keeping of animals in ventilated house	156	1.64	I	166	1.58	II	76	1.90	I	398	1.66	I
3.	Adequate water facility and feed to the buffalo	130	1.37	IV	179	1.70	I	74	1.85	III	383	1.60	II
4.	Wailiowing of buffaloes in pond	145	1.53	III	165	1.57	III	63	1.58	IV	373	1.55	IV
5.	Animal castration	33	0.35	IX	29	0.28	XII	10	0.25	XIII	72	0.30	XII
6.	Keeping of buffaloes loose in the shed	33	0.35	IX	33	0.31	XI	15	0.38	XII	81	0.34	XI
7.	Practising weaning in buffalo calves	16	0.17	XIII	18	0.17	XIII	5.0	0.13	XIV	39	0.16	XIII
8.	Keeping the animals on a concerete floor	29	0.31	XI	65	0.62	VII	31	0.78	VII	125	0.52	VII
9.	Application of tincture iodine to the belly of calf after parturition	44	0.46	VII	58	0.55	VIII	21	0.53	VIII	123	0.51	VIII
10.	Help taken from veteeinarian during the sickness of buffaloes	81	0.85	VI	97	0.92	VI	41	1.03	VI	219	0.91	VI
11.	Practising deworming in buffalo calves	89	0.94	V	121	1.15	V	47	1.18	V	257	1.07	V
12.	Practising dehoming in Buffalo calves on proper time	30	0.32	X	53	0.50	IX	21	0.52	IX	104	0.43	IX
13.	Keeping the buffalo and newly born calf at warm place Just after calving	34	0.36	VIII	47	0.45	X	19	0.47	X	100	0.42	X
14.	Separation of pregnant buffalo from the herd	23	0.24	XII	33	0.31	XI	16	0.40	XI	72	0.30	XII

Table 4. Relationship between personal attributes and extent of adoption of breeding and management practices by the dairy farmers

Sl. No.	Variables	Breeding				Management			
		Landless (n=95) 'r'	Upto 2 ha (n=105) 'r'	Morethan 2 ha (n=40) 'r'	Overall (N= 240) 'r'	Landless (n=95) 'r'	Upto 2 ha (n=105) 'r'	Morethan 2 ha (n=40) 'r'	Overall (N= 240) 'r'
1.	Age	-0.256*	-0.172	-0.291	-0.211**	-0.184	0.010	-0.324*	-0.096
2.	Education	0.351**	0.655**	0.660**	0.564**	0.183	0.383**	0.673*	0.389**
3.	Caste	0.010	0.141	-0.213	0.183**	0.164	0.216*	-0.164	0.247**
4.	Socio-Economic status	0.137	0.351**	0.146	0.286**	0.096	0.292**	0.307*	0.299**
5.	Herd size	0.115	0.221*	-0.141	0.206**	0.074	0.245*	0.318*	0.285**
6.	Extension contact	0.274**	0.444**	0.609**	0.439**	0.161	0.526**	0.602**	0.446**
7.	Mass media exposure	0.307**	0.531**	0.558**	0.483**	0.231*	0.495**	0.645**	0.465**
8.	Attitude towards R.B.H.P.	0.352**	0.426**	0.467**	0.383**	0.331**	0.439**	0.369*	0.377**
9.	Opinion leadership	0.390**	0.436**	0.535**	0.443**	0.259*	0.310**	0.528**	0.358**
10.	Risk orientation	0.380**	0.290**	0.350*	0.344**	0.320**	0.254**	0.322*	0.306**
11.	Economic motivation	0.385**	0.302**	0.473*	0.379**	0.243*	0.299**	0.370*	0.322**

Management practices

All the fourteen aspects of management practices as recommended by the university experts were included and the results have been given in Table 3. It reveals that in case of landless buffalo owners keeping of animals in ventilated house was occupied the highest position among all the management practices with the mean adoption score of 1.64. It implies that 82 percent of the respondent always adopted this practices whereas 2nd and 3rd ranks were occupied by adequate open space for buffaloes (I.59) and wailiowing of buffaloes in pond (1.53), respectively. The last rank was awarded to practising weaning in buffalo calves (0.17) which reveals that only 8.5 per cent of the respondents had adopted weaning practice. Hence poor adoption was observed.

In case or farmers having upto 2 ha of land, adequate water facility and feed to the buffalo (1.70) and keeping of animals in ventilated house (1.58) obtained Ist and 2nd adoption ranks, respectively whereas last 13th rank was occupied by the practising weaning in buffalo calves (0.17). Whereas in case of farmers having more than 2 ha of land the analysis indicates that as high as 95 percent of the respondents kept their animals in ventilated house as reflected by their 1.90 adoption score followed by adequate open space for the buffaloes (1.88) and adequate water facility and Iced to the buffaloes (1.85), respectively. The higher adoption score in respect to these management practices reflect the higher more that 90 percent farmers always adopted these practices. Poor adoption was found in case of weaning of buffalo calves (6.5 percent only). The higher adoption was found in case of respondents having more than 2 ha of land in comparison of other categories. It is evident from the above mentioned results that almost all the respondents of each category were having knowledge about importance of ventilated houses and therefore, adopted this practice with higher mean adoption score. While they had never taken care of artificial nurturing of newly born calf. Similar findings are reported by Rao et.al. (1993) and Yadav and Yadav (1998).

Relationship between personal attributes and extent of adoption of breeding and management practices by the dairy farmers.

Breeding practices

The data in Table 4 reveals that age bad negative and significant association while other variables namely, education, extension contact, mass media exposure, attitude towards recommended buffalo husbandry practices, opinion leadership, risk orientation and economic motivation were positively and significantly associated with extent of adoption of breeding practices by land less families. In case of farmers having up to 2 ha of land and more than 2 ha of land, education, socio-economic status, herd size, extension contact, mass media exposure, attitude towards recommended buffalo husbandry practices, opinion leadership, risk orientation and economic motivation were found to have positive and highly significant association with extent of adoption of breeding practices. When responses of 240 dairy farmers altogether were analysed and the results indicated that all the variables were having highly significant and positive relationship except age which has negative significant correlation with extent of adoption of breeding practices.

It impilies that all the variables have almost equal importance regarding adoption of breeding practices by the dairy farmers. Hence, the dairy farmers with the higher educational level, better socio-economic status, strong report with extension agencies and innovative nature had higher adoption score where as age of the farmers had negative correlation.

Management practices

It is evident from the data presented in Table 5 that mass media exposure, opinion leadership, economic motivation attitude and risk orientation were having positive and significant association with adoption of management practices in respect to the landless respondents.

As far as dairy farmers having upto 2 ha of land, all the variables except age were found to have positive and significant relationship with the extent of adoption of management practices. Similar trend of correlation was notices more than 2 ha of land.

It could be inferred from the above findings that these ten variables were important and may be useful in adoption of management practices while age was not so important in this regard.

Regression coefficients between independent variables and extent of adoption of dairy farmers regarding breeding and management practices

Breeding practices

It is clear from data presented in Table 5 that out of eleven variables only opinion leadership had exhibited significant value of 't' for 'b'. The R^2 value reveals that all the eleven variables jointly explained 59.5 percent variation towards adoption of breeding practices in case of landless families. The F values (4.13) was also significant at 1 percent level of significance. The R^2- value signify that all the eleven independent variables jointly explained 71.6 percent variation towards adoption of breeding practices. Education and extension contact were found to have positive and significant beta values in case of farmers having more than 2 ha of land. The overall analysis reveals that out of eleven variables, only four variables namely education, socio-economic status, herd size and economic motivation were contributed 64.6 percent variation towards adoption of breeding practices. It implies that four variables play an important role in adoption of breeding practices.

Management Practices

From the results of regression analysis shown in Table 5 it could be inferred that all the independent variable had a non-significant relationship with the adoption of management practices of the landless respondents. Under the category of farmers having upto 2 ha of land it could be seen that herd size, extension contact and economic motivation had positive and significant relation with adoption of management practices. It indicates that as the herd size, extension contact and economic motivation of the respondents increases, their adoption rate increases. It could be due to the facts that the farmers having large herd size are conscious and better linkage with extension personnel and such farmers taken dairying as a profession. Therefore they are economic motivated. In case of the respondents having more than two ha of land none of the independent variable have significant values of 'C' for 'b'. The R^2 value for landless labourer showed that the eleven independent variables explained only 47.9 percent of variation in the dependent variable adoption and F test was also found to be significant at 1 percent. In case of farmers having upto 2 hee of land and more than 2 ha of land, the R^2 value showed 65.5 and 80.3 percent of variation in the dependent variable i.e. adoption of management practices was explained by these eleven independent variables. Thus on the whole multiple regression analysis reveals that socio- economic status, herd size, extension contact and attitude of respondents towards buffalo husbandry practices played an important role in adoption of management practices.

Table 5. Regression coefficient between personal attributes and extent of adoption of dairy farmers regarding breeding practices

Sl. No.	Variables	Breedings Practices								Management Practices							
		Landless		Upto 2 ha		Morethan 2 ha		overall		Landless		Upto 2 ha		Morethan 2 ha		Overall	
		'b'	't'	'b'	't'	'b'	't'	'b'	't'	'b'	't'	'b'	't'	'b'	't'	'b'	't'
1.	Age	-0.031	0.916	-0.000	0.013	-0.0653	1.105	0.044	0.831	0.047	0.545	0.017	0.477	0.045	0.863	0.004	0.174
2.	Education	0.463	1.542	1.256	4.584**	-0.166	0.315	0.140	0.281	2.196	3.298**	0.500	1.696	1.295	3.198**	0.926	5.514**
3.	Caste	0.230	0.378	-0.275	0.484	1.784	1.669	1.610	1.554	-0.800	0.447	1.076	1.958	-2.013	1.852	0.201	0.641
4.	Socio-Economic status	-0.147	1.376	-0.061	0.747	-0.195	1.040	-0.074	0.503	0.082	0.489	-0.176	2.176*	-0.053	0.522	-0.098	2.111*
5.	Herd size	1.496	1.821	0.961	1.954	1.387	0.961	1.829	2.054*	1.007	0.831	1.981	3.290**	-1.314	1.781	0.872	2540*
6.	Extension contact	0.136	0.715	0.155	1.111	-0.052	0.155	0.785	3.118**	0.714	1.630	0.457	2.521*	0.596	2.236*	0.211	2.037*
7.	Mass media exposure	-0.170	0.796	0.042	0.236	0.184	0.491	0.447	1.380	0.240	0.601	0.215	1.072	0.636	0.148	-0.031	0.274
8.	Attitude towards R.B.H.P.	0.200	1.025	0.193	1.182	0.589	1.716	0.480	1.628	-0.008	0.621	0.448	2.489*	0.199	0.873	0.155	1.510
9.	Opinion leadership	0.144	2.152*	0.065	1.070	0.091	0.771	-0.052	0.470	-0.111	0.764	0.021	0.300	-0.037	0.414	0.076	1.929
10.	Risk orientation	0.217	1.523	-0.064	0.522	0.457	1.828	-0.332	1.486	0.292	0.925	0.001	0.004	0.181	0.942	0.003	0.030
11.	Economic motivation	0.264	1.656	0.078	0.585	0.141	0.502	0.493	2.054*	-0.304	0.807	0.201	1.336	-0.195	0.851	0.24	1.434
	R² =value	0.595		0.716		0.479		0.665		0.803		0.577		0.818		0.646	
	F= value	4.13**		8.90**		2.24*		6.36**		4.63**		10.37**		5.16**		14.86**	

*Significant at 5% level of probability   **Significance at 1% level of probability

CONCLUSION

On the basis of findings of the study it may be concluded that the majority of the respondents possessed medium level of adoption of breeding and management practices. The higher adoption was recorded in Al services & watching on oestrous cycle by the respondents of each category. Results indicated that almost all the respondents of each category were about importance of ventilated animal sheds and therefore, adopted this practices with higher mean adoption score.

While they had never taken care of artificial nurturing of newly born calfs. Results indicated that all the Independent variable were having highly significant and positive relationship except age which has negative significant correlation with extent of adoption of breeding and management practices. In order to increase livestock production and productivity, it is essential to provide input services (breeding, Ceding, management and health care) at the farmers' door and create awareness among the dairy farmers about the new technologies through a strong Animal Husbandry Extension Network system.

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