PRACTICES AFFECTING REPRODUCTION (PAR) SCORE OF DAIRY FARMERS IN WESTERN REGION OF PUNJAB

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A study was conducted in the western region of Punjab to know the awareness level of dairy farmers possessing small (1-9 animals), medium (10-30 animals) and large (more than 30 animals) dairy units about the practices affecting reproduction (PAR). There was significant difference in observed PAR knowledge score of small, medium and large dairy farmers. Majority of the dairy farmers had medium PAR awareness level, which was found to be highly positively correlated with age and land holding of farmers. The study describe dire need of strong extension agencies for knowledge dissemination and highlightens separate strategies to be undertaken for improving the PAR awareness level of farmers operating different dairy units for profitability and sustainability.

Key words : Dairy, Reproduction, Awareness, Feeding, Health, Farmer, Punjab

The success of dairy farming lies in ensuring proper and optimal reproductive rhythm of an individual animal in the herd. (Agarwal *et al.*, 2005). Ideally, the reproductive potential of animal is effected by feeding, management and health care practices of that farm. Improved feeding has a positive effect on reproductive performance (Ghosh *et al.*, 1993). While the health care practices like vaccination and deworming ensure proper health of animals that promotes their productivity (Singh *et al.*,2007). Further, the herd management practice also influence the reproduction (Coleman *et al.*,1985). As, the designing of a suitable extension strategy for knowledge dissemination to dairy farmers about recommended practices requires a thorough understanding of existing level of knowledge of farmers. Henceforth, the present study was undertaken to document the knowledge level of farmers regarding various practices affecting reproduction (PAR) at dairy farms in western region of Punjab.

Punjab state has been divided into six agro-climatic regions viz. sub-mountainous undulating region, undulating plain region, central plain region, western plain region, western region and flood prone region (Mahi and Kingra, 2013). The western region consists of Fazilka, Mukatsar, Bathinda, and some part of Mansa and Faridkot districts. The data were collected randomly through a pre-structured and pre-tested questionnaire by personal interview technique. Respondents were categorized in to three different categories of 30 farmers each i.e. Group I (small dairy unit with 1-9 animals), Group II (medium dairy unit with 10-30 animals) and Group III (large dairy unit with more than 30 animals). Thus, the total numbers of respondent were 90. Total 23 practices affecting reproduction were selected after discussion with experts as well as after scrutinizing the literature. These farming practices were divided in to management, feeding, health care and technical knowledge practices. Data regarding knowledge score for these practices were given one for correct answer while zero for incorrect answer. Farmers were categorized as having low (score 0-7), medium (score <7 -14) and high (< 14) PAR awareness level. Data regarding demographic profile of respondents were categorized as in Table III.

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The data was analyzed for frequency, percentage, One way ANOVA and correlation by using IBM SPSS Statistics for window version 22.0 (IBM Corp., Armonk, NY, United State of America)

Table I reveals that most of the farmers of Group I and II were not aware about individual animal record and about comfortable housing to animals. The awareness about care of pregnant animal and drying off pregnant animal was more in Group III than in Group I and II. Very less number of farmers in Group I and II were feeding animals according to milk production, providing balanced ration to heifer, following mineral mixture feeding and feeding pregnant animal after drying. Endoparasite and Ectoparasite control was more at Group III dairy units than at Group I and II dairy units. Amitendu *et al.,* (2014) also reported that majority of the livestock farmers were having medium level of knowledge on deworming practices and low level of knowledge on feeding of concentrate and about animal husbandry practices

Very less number of farmers were aware about brucellosis vaccine. Chatikobo *et al.,* (2009) also reported that very few farmers (1.1%) vaccinated their cattle against reproductive diseases such as brucellosis and more than 95 % do not keep records.

Awareness about H.S. vaccine was 13.33 %, 30 % and 40 % for Group I, II and III respectively. Awareness about F.M.D. vaccine was 26.67 %, 36.67 % and 50 % for Group I, II and III respectively. This indicates that farmers are more aware about FMD. than HS vaccination. However, Sabapara *et al.,*(2010) reported that regular vaccination for FMD and HS was practised by 79% respondents and deworming at regular intervalby 25.50% respondents.

Very less number of farmers were aware about disease testing at dairy farms. Awareness about various reproductive disorders such as repeat breeding, anoestrus, dystocia, prolapse, retention of placenta, torsion, abortion and pyometra were more for Group III than for Group I and II. There was significance difference (*p*<0.05) in awareness about feeding practice, health care and technical knowledge and overall mean awareness percentage about PAR (Table I).

Table II depicts that PAR score and awareness level of dairy farmers running medium unit, large unit and overall knowledge was in medium awareness category, whereas farmers running small units have low awareness level. There was significance difference (*p*<0.01) in PAR score of farmers running small, medium and large dairy units. This clearly indicates that separate extension strategies need be adopted for educating the farmers rearing different numbers of animals as evidenced by PAR score and awareness level.

Table III depicts demographic profile of respondents. Most of the farmers of Group I, II and III were in age group between 31-60 years. Least number of farmers were above 60 years. 46.67 % of farmers in Group I and 33.33 % of farmers in Group II were illiterate. The educational qualification of farmers of Group III was higher than the farmers in Group I and II. 46.67 % of farmers of Group I have less than 5 acres and 16.67 % have more than 10 acres of land. Most (56.67%) of farmers of Group III fall in 5-10 acres category.Table IV reveals that age and land holding were highly positively correlated with PAR awareness level. However, Sasane *et. al.* (2013) reported that knowledge level was negatively correlated with age.

It can be concluded from the forgoings that dairy farmers of western region of Punjab had medium PAR awareness level.Thus, there is a dire need to communicate and educate farmers about PAR.Also, there is enough scope for increasing the existing knowledge of dairy farmers about PAR. Regular and repeated awareness drives, training programmes, demonstrations, Pashu Palan melas, field days, exhibitions, camps, radio/TV talks need to be undertaken by extension agencies for enhancing knowhow of the farmers so that the dairy farming is sustainable and more economically viable for the farmers.

Table I : Awareness about PAR for different groups of farmers in western region of Punjab

Awareness about	Group I (n=30) (%)	Group II (n=30) (%)	Group III (n=30) (%)
a) Management Practice			
Individual animal record	5 (16.67)	9 (30)	15 (50)
Comfortable housing	4 (13.33)	8 (26.67)	14 (46.67)
Care to pregnant animal	20 (66.67)	22 (73.33)	24 (80)
Drying off Pregnant animal	20 (66.67)	23 (76.67)	25 (83.33)
Separating Pregnant animal	10 (33.33)	12 (40)	14 (46.67)
Mean Percentage	39.33	49.33	61.33
b) Feeding Practice			
Feeding according to milk production	3 (10)	8 (26.67)	16 (53.33)
Balanced ration to heifer	2 (6.67)	5 (16.67)	8 (26.67)
Mineral mixturefeeding	5 (16.67)	9 (30)	12 (40)
Feeding pregnant animal after drying	1(3.33)	4 (13.33)	8 (26.67)
Mean percentage	9.17[a]	21.67[b]	36.67[c]
c) Health care and technical knowledge			
Endoparasite control	11 (36.67)	15 (50)	19 (63.33)
Ectoparasite control	10 (33.33)	14 (46.67)	16 (53.33)
Brucellosis vaccine	0 (0)	1(3.33)	3 (10)
H.S. vaccine	4 (13.33)	9 (30)	12 (40)
FMD. Vaccine	8 (26.67)	11 (36.67)	15 (50)
Disease testing	0 (0)	2 (6.67)	5 (16.67)
Repeat breeding	4 (13.33)	13 (43.33)	17 (56.67)
Anoestrus	3 (10)	11 (36.67)	13 (43.33)
Dystocia	1(3.33)	4 (13.33)	9 (30)
Prolapse	5 (16.67)	11 (36.67)	16 (53.33)
Retention of Placenta	9 (30)	16 (53.33)	17 (56.67)
Torsion	1(3.33)	4 (13.33)	7 (23.33)
Abortion	2 (6.67)	7(23.33)	11 (36.67)
Pyometra	3 (10)	7(23.33)	9 (30)
Mean percentage	14.52[d]	29.76[e]	40.28[f]
Overall mean percentage	**18.99[g]**	**32.61[h]**	**44.20[i]**

Figure in parenthesis indicate percentage
Superscripts a, b, c showing difference at $p<0.05$
Superscripts d,e,f showing difference at $p<0.05$
Superscripts g,h,i showing difference at $p<0.05$

Table II: PAR score and Awareness level of dairy farmers of western region of Punjab

Farmer	PAR score (Mean ± S.E)	PAR Awareness level
Group I	$4.33^a \pm 0.32$	Low
Group II	$7.53^b \pm 0.65$	Medium
Group III	$10.10^c \pm 0.54$	Medium
Overall	7.32 ± 0.39	Medium

Superscripts a, b, c showing difference at $p<0.01$

Table III : Demographic profile and PAR awareness level

Parameter	Value	Group I (n=30) (%)	Group II (n=30) (%)	Group III (n=30) (%)
Age (years)	≥ 30 years	11 (36.67)	12 (40)	13 (43.33)
	31-60	17 (56.67)	16 (53.33)	16 (53.33)
	Above 60	1 (3.33)	2 (6.67)	1 (3.33)
Education	Illiterate	14 (46.67)	10 (33.33)	4 (13.33)
	Primary	4 (13.33)	6 (20)	8 (26.67)
	Middle	8 (26.67)	7 (23.33)	4 (13.33)
	High School	4 (13.33)	5 (16.67)	8 (26.67)
	Higher secondary	0 (0)	2 (6.67)	4 (13.33)
	Graduate and Postgraduate	0 (0)	0 (0)	2 (6.67)
Land holding (Acre)	(< 5)	14 (46.67)	12 (40)	8 (26.67)
	> 5-10	11 (36.67)	14 (46.67)	17 (56.67)
	>10	5 (16.67)	4 (13.33)	5 (16.67)
PAR awareness level	Low (0-7)	28 (93.33)	17 (56.67)	6 (20)
	Medium (<7 -14)	2 (6.67)	11(36.67)	21 (70)
	High (< 14)	0 (0)	1 (3.33)	3 (10)

Figure in parenthesis indicate percentage

Table IV : Correlation between PAR awareness level and demographic profile

Demographic profile	Correlation coefficient 'r' value		
	Group I	Group II	Group III
Age	0.206	0.789	0.764
Land holding	0.796	0.842	0.996

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