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Research Article

KNOWLEDGE OF FARMERS ABOUT RECOMMENDED GOAT REARING PRACTICES IN HARYANA

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ABSTRACT

Goat rearing is well suited to rural weaker section of the society with small land or community based free grazing resources. The present study was undertaken to assess the extent of knowledge about scientific rearing goat practices on one hundred and twenty goat farmers selected from twelve villages of Sirsa, Bhiwani and Mahendergarh districts of Haryana by using multi-stage random sampling technique. The data was collected through pre-tested structured schedule by holding interview with the farmers during 2016-17. The study revealed that goat farmers possessed maximum knowledge about 'gestation period of goat'(86.3%),'male: female ratio in herd'(69.6%),'breeding age of doe' (69.3%), 'types of floor' (73.6%), 'colostrums feeding to newly born kid' (84.3%), 'dependency on dam's milk' (76.3%) 'grazing system' (73.3%), 'provision of sanitary condition' (88.6%),'deworming' (100%), 'appropriate time for weaning' (88.3%) and 'age of selling of kid' (64%)' whereas the goat farmers were ignorant about 'mating methods' (18.6%), 'direction of shed' (11%), 'mineral mixture', 'vitamin supplements', 'age of castration' and'keeping of horned bucks at farms'. Category-wise analysis indicated that large herd category farmers had comparatively higher knowledge in all the areas as compared to medium and small category.

Key words: Goat rearing practices. Knowledge level, Marketing practices, Management practices

Goat farming provides much needed livestock support to the landless and weaker sections of the Indian rural society. Approximately 20 million small and marginal farmers depend on goat farming and this enterprise contributes about 8 per cent of the total livestock GDP and generates 4 per cent employment directly and indirectly in the country (Annual Report of Government of India, 2012). However, the productivity of goats under the prevailing traditional production system is very low (Singh and Kumar, 2007). It is because they are maintained under the extensive system on natural vegetation on degraded common grazing lands and tree lopping. Even these degraded grazing resources are shrinking continuously. Moreover, adoption of improved production technologies/management practices in the farmers' flock is very low.

Goat research needs progress rapidly to reach to the same level of knowledge as other species like cattle or sheep, especially in milk and meat production. Scientific research in field of goat husbandry is moving very fast. Knowledge of farmers is pre-requisite for adoption of technologies developed by the scientists. Keeping in view the above fact, a study was undertaken to assess the knowledge level of farmers about scientific goat rearing practices (SGRP) in Haryana.

MATERIALS AND METHODS

The present study was conducted in Haryana state. Out of 22 districts of the state, three districts, namely Mahendergarh, Bhiwani and Sirsa were selected on the basis of highest concentration of goat population in these districts. Multi-stage sampling was followed in the study. Two C.D. Blocks were selected randomly from each district and two villages were again chosen randomly from each block. Hence, 12 villages were selected from these three districts. A village-wise list of goat farmers were prepared and from that list, ten goat farmers were selected randomly from each village, thus the final sample unit comprised of one hundred twenty (120) goat farmers for this study. Further, a list of three categories of the goat farmers was again prepared on the basis of their flock size viz. small flock sized goat farmers having goat up to 40 numbers, medium flock sized goat farmers having goat 41 to 80 and large flock sized goat farmers having more than 80 goats.

Knowledge in the present study was operationalized as the amount of understood information possessed by the goat farmers with respect to scientific goat rearing practices. The knowledge level of different categories of goat farmers was measured by developing a knowledge test. To make the knowledge test a valid and reliable instrument, utmost care was taken to cover all the important aspects of scientific goat rearing practices, hence, the recommended goat husbandry practices mentioned in 'Hand book of Animal Husbandry' published by ICAR as well as in 'Package of Practices for Livestock and Poultry- Production and Health' published by the Directorate of Publications, CCS HAU, Hisar were considered. The prepared knowledge test was thoroughly scrutinized in consultation with scientists working in the Department of Livestock Production & Management,

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Veterinary and Animal Husbandry Extension Education, Animal Nutrition, Veterinary Public Health and Epidemiology etc. For measuring knowledge among goat farmers, the whole package of recommended goat rearing practices was divided into six broad domain/areas namely, breeding, housing, management, feeding, health-care, and marketing practices. Furthermore these six broad domains/ areas were split again into several questions/items. Multiple choice questions were framed and the response from farmers were received on four points continuum i.e. correct, partially correct, wrong answer and don't know and the weight-age of 3, 2, 1 and 0 were given accordingly. Finally, the test was administered to the goat farmers and responses were recorded accordingly. The overall knowledge score for each respondent was then calculated by adding up all the scores obtained in each aspect/domain.

For item-wise analysis, the mean score and mean percent score were worked out, and items obtaining maximum mean percent score were ranked first and the next subsequent one was given the second rank and so on in descending order.

$$\text{Knowledge mean store} = \frac{\text{Score obtained for each item}}{\text{Number of respondents}}$$

$$\text{Knowledge mean percent store} = \frac{\text{Mean score obtained for each item}}{\text{Maximum attainable score}} \times 100$$

RESULTS AND DISCUSSION

Item-wise analysis was done to ascertain the exact knowledge possessed by the farmers about the various aspects of goat rearing. The findings are presented as under:

Breeding practices: The data given in table 1 reveals that among small farmers' category, the farmers had maximum knowledge about gestation period of goats and hence ranked first. Moreover, analysis indicated that the small goat farmers had least knowledge about mating method. In case of medium farmers' category, similar results were observed with slight variations for instance, respondents had 84.9 and 74.6 per cent of knowledge about gestation period of goat and male: female ratio in herd, respectively. Further, analysis revealed that large category farmers had more knowledge as compared to small and medium farmers. Overall, the mean per cent scores of all 120 respondents indicated that 86.3 and 69.6 per cent knowledge were possessed by the farmers about gestation period of goat and male: female ratio in herd so occupied first and second ranks, respectively. The maximum knowledge may be because of their long goat farming experience. However, only 18.6 per cent of them were aware about correct mating method. Hence, this knowledge item got last rank order accordingly. This might be due to poor knowledge about the mating system because they followed traditional methods of mating in which all rams of the flock are kept always with the ewes and lambs so they practiced random method of mating. Similarly they had low knowledge about the optimum time for service in does due to practice of random method of mating. Knowledge about the heat detection was also poor because they did not maintain any record and use teaser bucks. Similar findings were reported by Lavania *et al.* (2006), Singh *et al.* (2013) and Senthil Kumar *et al.* (2013) in their studies.

Housing practices: The data presented in table 2 indicate

Table 1
Item-wise knowledge level of goat farmers about breeding practices

Sr. No	Items/Areas	Small (40)			Medium (54)			Large (26)			Overall (120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Goat breeds	1.50	50.0	VIII	1.78	59.4	VIII	2.03	67.7	VIII	1.77	59.0	VIII
2	Heat signs	1.82	60.6	III	2.11	70.4	III	2.17	72.6	IV	2.03	67.6	IV
3	Length of estrous cycle	1.68	56.0	VI	1.84	61.5	VII	2.05	68.6	VII	1.85	61.6	VI
4	Time of insemination	1.72	57.4	IV	2.07	69.2	V	2.14	71.4	V	1.97	65.6	V
5	Mating method	0.41	13.9	XIII	0.56	18.7	XIII	0.72	24.3	XIII	0.56	18.6	XIII
6	Breeding season	1.15	38.6	XII	1.49	49.7	XI	1.90	63.5	X	1.51	50.3	XI
7	Male: Female ratio in herd	1.46	48.7	IX	2.23	74.6	II	2.60	86.8	II	2.09	69.6	II
8	Age of buck for breeding	1.54	51.4	VII	1.89	63.3	VI	2.09	69.8	VI	1.84	61.3	VII
9	Age of puberty of does	1.58	52.6	V	1.75	58.6	IX	1.81	60.5	XI	1.71	57	IX
10	Gestation period of goat	2.30	76.8	I	2.54	84.9	I	2.94	98.3	I	2.59	86.3	I
11	Breeding age of does	1.83	61.3	II	2.09	69.9	IV	2.34	78.3	III	2.08	69.3	III
12	Goat prolificacy	1.35	45.3	X	1.74	58.3	X	1.97	65.6	IX	1.68	56.0	X
13	P.D. methods	1.20	40.0	XI	1.37	45.6	XII	1.71	57.0	XII	1.42	47.3	XII

Ms= Mean Score, MPS= Mean Per cent Score

that among small farmers category, maximum knowledge was about correct type of floor (58.3%). In many areas related to housing, the farmers had less than 40 per cent knowledge and also, very poor knowledge (6%) was observed about direction of shed among small farmers. In case of medium farmers' category, similar results were recorded with slight variations for instance, respondents had 76.3 and 58.8 per cent knowledge about type of floor and type of shed thereby occupied first and second rank, respectively. The minimum (10%) of knowledge was found about direction of shed. As far as large category of farmers is concerned, it was observed that they had more knowledge as compared to small and medium farmers. Minimum knowledge with 39.3 and 17 per cent was noticed about floor space for doe and direction of shed, respectively.

Overall, the mean per cent scores of all 120 respondents indicate almost similar results i.e. the farmers had maximum knowledge about type of floor followed by type of shed, type of housing, floor space for does, floor space for buck and floor space for does with kids. Maximum knowledge in these areas may be because of their experience gained through years of exposure to climatic conditions of their areas and its effect on their animals and their rearing practices. Minimum knowledge was observed for direction of shed (11%). This may be due to their low educational status or high illiteracy among the farmers moreover they have poor access to credit facilities thus cannot afford recommended floor space area and recommended no. of does to be kept in a given area. Similar findings were reported by George *et al.* (2010).

Feeding practices: It is evident from information given in table 3 that all the three categories of farmers had maximum knowledge about colostrum feeding to newly born kids (between76.6 to 85.7 per cent). The possible reason for high knowledge about these practices may be due to awareness about colostrum feeding for proper growth, they know the nutritious and immunity values of mother's milk, awareness about the advantages of avoiding early turn out of flocks for grazing to reduce infections and rich farming experience. The findings are in conformity with the findings of Mandavkar *et al.* (2015) in which they observed that respondents knowledge found enriched in practices like feeding of colostrum to kids (60%).

In all the three categories of goat farmers, they had comparatively poor knowledge about concentrate mixture to breeding buck, concentrate mixture to kid and feeding of dry fodder to goat, however, its range was very wide i.e. from 29 to 51, 33.3 to 61 and 37to 56.6 per cent, respectively thereby occupy the last ranks depending from small to large flock size. None of goat farmers knew about mineral mixture and vitamin supplementation across all the three categories of farmers. These findings may be attributed to the fact that goat owners were unaware about the benefits of these practices such as proper age of kid increases its immunity, supply of minerals and vitamins enhance productive capacity and quality of animals.

Management practices: Data depicted in table 4 exhibit that the entire small category was aware about deworming (100%) and hence, it ranked first. None of the farmers knew about horned bucks, buck kids' castration and dipping of kids. Low level of knowledge was noticed about maintenance of animal records, disbudding of kids' and application of dipping. In case of medium farmer's category, all the respondents were well aware about

Table 2
Item-wise knowledge level of goat farmers about housing practices

Sr. No	Items/Areas	Small (40)			Medium (54)			Large (26)			Overall (120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Direction of shed	0.18	6.00	XI	0.30	10.0	X	0.51	17.0	XII	0.33	11.0	IX
2	Height of goat pen	1.15	38.6	IV	1.50	49.8	V	1.73	57.8	VIII	1.46	48.6	VI
3	Floor space for doe	0.50	16.6	VIII	0.81	27.0	IX	1.17	39.3	XI	0.82	27.3	VIII
4	Floor space for buck	1.10	36.6	VI	1.37	45.8	VII	2.04	68.3	III	1.50	50.0	V
5	Floor space for doe with kid	1.10	36.6	VI	1.42	47.5	VI	1.99	66.5	V	1.50	50.0	V
6	Floor space for does in groups	1.05	35.0	VII	1.63	54.6	IV	1.94	64.8	VI	1.54	51.3	IV
7	No: of does in doe shed	0.48	16.0	IX	1.30	43.3	VIII	1.56	52.3	X	1.11	37.0	VII
8	No: of bucks in a buck shed	1.12	37.3	V	1.49	49.8	V	1.74	58.0	VII	1.46	48.6	VI
9	No: of kids in a kid shed	0.40	13.3	X	1.25	43.3	VIII	1.68	56.0	IX	1.11	37.0	VII
10	Type of housing	1.52	50.6	II	1.75	58.5	III	2.02	67.6	IV	1.76	58.6	III
11	Type of shed	1.44	48.3	III	1.76	58.8	II	2.23	74.6	II	1.81	60.3	II
12	Type of floor	1.74	58.3	I	2.28	76.3	I	2.63	87.8	I	2.21	73.6	I

Ms= Mean Score, MPS= Mean Per cent Score

Table 3
Item-wise knowledge level of goat farmers about feeding practices

Sr. No	Items/Areas	Small (40)			Medium (54)			Large (26)			Overall (120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Colostrum feeding to newly born kid	2.29	76.6	I	2.57	85.7	I	2.73	91.1	I	2.53	84.3	I
2	Dependency on dam's milk	2.06	68.7	II	2.25	75.1	III	2.58	86.3	II	2.29	76.3	II
3	Grazing system	1.90	63.4	IV	2.35	78.4	II	2.46	82.1	IV	2.23	74.3	III
4	Concentrate mixture during advanced pregnancy	1.65	55.0	V	2.03	67.8	V	2.22	74.3	VI	1.96	65.3	V
5	Conc. Mix. to breeding buck	0.87	29.0	X	1.20	40.0	IX	1.53	51.0	X	1.20	40.0	X
6	Green fodder mix. to kid	1.94	64.7	IV	2.11	70.6	IV	2.50	83.5	III	2.18	72.6	IV
7	Conc. Mix to kid	0.99	33.3	IX	1.36	45.5	VIII	1.83	61.0	VII	1.39	46.3	VIII
8	Conc. Mix to kid (6-12 months of age)	1.41	47.3	VI	1.41	47.3	V	1.64	54.6	IX	1.48	49.3	VI
9	Age of kid at first grazing	1.16	38.8	VII	1.39	46.6	VI	1.49	49.8	XI	1.33	44.6	IX
10	Browsing time per day	2.04	68.0	III	2.25	75.1	III	2.39	79.7	V	2.32	74.3	III
11	Min. mix and vitamin supplementation	0.00	0.00	XI	0.00	0.00	X	0.00	0.00	XII	0.00	0.00	XI
12	Feeding of dry fodder	1.11	37.0	VIII	1.38	46.2	VII	1.70	56.6	VIII	1.39	46.3	VII

Ms= Mean Score, MPS= Mean Per cent Score

Table 4
Item-wise knowledge level of goat farmers about management practices

Sr. No	Items/Areas	Small (40)			Medium (54)			Large (26)			Overall (120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Colostrum feeding to newly born kid	2.29	76.6	I	2.57	85.7	I	2.73	91.1	I	2.53	84.3	I
2	Dependency on dam's milk	2.06	68.7	II	2.25	75.1	III	2.58	86.3	II	2.29	76.3	II
1	Appropriate time for weaning	2.28	76.0	II	2.67	88.9	III	3.00	100.0	I	2.65	88.3	II
2	Resting period to parturiated doe	1.71	57.3	V	1.97	65.8	V	2.72	90.8	II	2.10	70.0	IV
3	Age of castration	0.00	0.00	XI	0.00	0.00	XII	0.00	0.00	X	0.00	0.00	XII
4	Culling at goat farm	2.05	68.5	III	2.70	90.3	II	3.00	100.0	I	2.58	86.0	III
5	Dipping	2.02	67.5	IV	2.02	67.5	IV	2.02	67.5	V	2.02	67.3	V
6	Dipping(kids)	0.00	0.00	XI	0.73	24.4	XI	1.50	50.1	VII	0.74	24.66	XI
7	Trimming at goat farm	1.38	46.3	VII	1.73	57.8	VII	2.56	85.6	III	1.89	63.0	VI
8	Weighing of animals	1.45	48.6	VI	1.86	62.3	VI	2.22	74.3	IV	1.84	61.3	VII
9	Deworming	3.00	100.0	I	3.00	100.0	I	3.00	100.0	I	3.00	100.0	I
10	Disbudding of kids	0.99	33.3	IX	0.99	33.3	X	1.14	38.3	IX	1.04	34.6	X
11	Application of dipping at goat farm	1.16	38.7	VIII	1.29	43.0	VIII	1.70	56.8	VI	1.38	46	VIII
12	Maintenance of animal records	0.86	28.6	X	1.17	39.0	IX	1.33	44.5	VIII	1.12	37.3	IX
13	Keeping of horned bucks at the farm	0.00	0.00	XI	0.00	0.00	XII	0.00	0.00	X	0.00	0.00	XII

Ms= Mean Score, MPS= Mean Per cent Score

deworming thereby occupied the first rank followed by culling at goat farm and appropriate time for weaning. The possible reason for higher knowledge about these sub-practices may be attributed to long period of goat farming experience, farmers are aware about importance of weaning at proper time for attaining market weight and acquiring high price and they follow culling practice as a tradition. None of the medium category of farmers knew about age of castration and keeping of horned bucks followed by low level of knowledge about dipping' (kids), disbudding of kids and maintenance of animal records. Minimum knowledge for these practices may be due to

improper knowledge about practice of dipping due to lack of training and extension agency contact, farmers prejudice against castration and lack of knowledge about importance of it. Almost similar results, reminiscent of the above two categories, were the large farmers' category along with increasing extent of knowledge. The findings were in line with the findings of Gopala *et al.* (2010) and Satyanarayan and Jagadeeswary (2010).

Health-care practices: The data given in table 5 revealed that the farmers of small category possessed 80 per cent of knowledge about provision of sanitary condition and hence it ranked first. The farmers were not aware about areas such as vaccination against E.T. and vaccination against PPR, however, they had comparatively low extent of knowledge about deworming interval in days and treatment of animal.

Similar results were observed in case of medium category of farmers with slight deviations in the extent of knowledge. The first, second and third ranks of knowledge were obtained by the farmers about provision of sanitary condition, disposal of dead animal and naval disinfection in kids, respectively. The reasons for high knowledge about these practices may be due to higher incidence of diseases due to poor sanitation, farmers 'disposed off' their dead animals by burial method to check the infection, consultation to veterinary doctor etc. All the large category of farmers knew the correct method of disposal of dead animals followed by 82.5 per cent of them had knowledge about naval disinfection of kids. However, few of them knew about vaccination of kids against PPR. The probable reason may be that the farmers were totally dependent on veterinarian or para-veterinarian for the vaccination. Farmers were fully unaware about the signs/symptoms of PPR in the flock. Therefore, proper awareness is needed in these areas. However, these findings are contradictory from findings of Saha *et al.* (2010) who reported that farmers had overall 61.67 and 29.17 percent knowledge of vaccination and disposal of animals, respectively. The overall analysis followed the trend like that of small, medium and large goat farmers with slight deviations in the ranks of items and extent of their knowledge about health-care practices.

Marketing practices: The data in table 6 indicated that about half of the farmers of small category knew about age of selling of kids followed by place for selling animals. In case of medium farmer's category, the respondents occupied first and second ranks, similar to small category. Like that of the above two categories, the large category of farmers had higher per cent age of knowledge in every items. The farmers had 80 per cent knowledge about age of selling of kid and weaning weight of kid (74.2 per cent). Last two ranks were occupied by the large farmers about weight of kid at the time of selling and place for selling animal. Pooled analysis depicted that farmers had knowledge ranging between 57 to 64 per cent about practices namely age of selling of kid and place for selling animal. The moderate knowledge may be due to farmers' moderate level of education and moderate socio-economic background, lack of availability of organized markets or distant locations of markets. Minimum knowledge was noticed in the areas viz. weight of kid at time of selling. Comparatively minimum knowledge may also be due to their illiteracy, poor socio economic status and rearing of local breeds. It is suggested that the goat farmers should be made aware about weight of kid at the time of selling through educational campaign. Similar findings were reported by Senthil Kumar *et al.* (2013). It is mentioned here that as the flock size is increased, the extent of

Table 5
Item-wise knowledge level of goat farmers about health care practices

Sr.	Items/Areas	Small (40)			Medium (54)			Large (26)			Overall (120)		
No		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Appropriate time for vaccination against E.T.	0.00	0.00	IX	0.46	15.4	IX	0.90	30.1	VII	0.45	15.0	VII
2	Vaccination of kid against PPR	0.00	0.00	IX	0.06	2.20	X	0.12	4.20	VIII	0.06	2.00	VIII
3	Deworming interval of adults	1.45	48.6	V	1.78	59.4	VI	2.02	67.6	V	1.75	58.3	V
4	Deworming interval of kids	0.83	27.8	VIII	1.09	36.6	VIII	1.45	48.6	VI	1.12	37.3	VI
5	Disposal of dead animals	2.28	76.0	II	2.54	84.8	II	3.00	100.0	I	2.60	86.6	I
6	Treatment of animal	1.12	37.4	VII	1.73	57.8	VII	2.29	76.4	IV	1.75	58.3	V
7	Retention of placenta and metritis	1.83	61.2	IV	2.17	72.4	IV	2.67	88.9	II	2.22	74.0	III
8	Treatment of Infertility and orchitis	1.20	40.0	VI	1.89	63.1	V	2.28	76.4	IV	1.79	59.6	IV
9	Naval disinfection in kids	2.03	67.7	III	2.35	78.4	III	2.47	82.5	III	2.28	76.0	II
10	Provision of Sanitary conditions	2.40	80.0	I	2.58	86.1	I	3.00	100.0	I	2.60	86.6	I

Ms= Mean Score, MPS= Mean Per cent Score

Table 6
Item-wise knowledge level of goat farmers about marketing practices

Sr. No	Items/Areas	Small (40)			Medium (54)			Large (26)			Overall (120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Age of selling of kid	1.50	50.3	I	1.86	62.0	I	2.40	80.0	I	1.92	64.0	I
2	Weight of kid at the time of selling	1.02	34.3	IV	1.68	56.2	IV	2.13	71.1	III	1.61	53.6	IV
3	Place for selling animal	1.35	45.0	II	1.73	57.8	II	2.08	69.4	IV	1.72	57.3	II
4	Weaning weight of kid	1.08	36.2	III	1.69	56.6	III	2.22	74.2	II	1.66	55.3	III

Ms= Mean Score, MPS= Mean Per cent Score

knowledge in different domain areas like breeding, housing, feeding, management, health care and marketing were also increased among the farmers.

CONCLUSIONS

On the basis of findings of this study, it can be concluded that the farmers had least knowledge about health care practices and maximum knowledge regarding gestation period of goat. The goat farmers are ignorant about mating methods, direction of shed, mineral mixture and vitamin supplements, age of castration and keeping of horned bucks at farms. Therefore, it is suggested that special awareness campaign should be organized by the Department of Animal Husbandry & Dairying in collaboration with KVKs to educate the farmers about these areas.

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