Haryana Vet. (June, 2018) **57 (1)**, 62-66

Research Article

ADOPTION OF RECOMMENDED GOAT REARING PRACTICES IN HARYANA

PRINCE LUTHRA, S. P. SINGH*, S.S.SANGWAN, GAUTAM, ANIKA MALIK and RACHNA[1]
Department of Veterinary and A. H. Extension Education, College of Veterinary Sciences
[1]College of Dairy Science and Technology
Lala lajpat Rai University of Veterinary and Animal Sciences, Hisar-125 004, India

ABSTRACT

The present study was conducted on 120 goat farmers selected from 12 villages of Mahendragarh, Sirsa and Bhiwani districts of Haryana by using multistage sampling technique to investigate adoption level among farmers about recommended Goat Rearing Practices (RGRP). The data were collected through a well-structured schedule by holding personal interview with the farmers during 2015-16. The study revealed that, in case of breeding practices, maximum adoption (54.4%) was found about selection and purchase of quality animals followed by identification of animal in heat (26%) whereas none of the goat farmers adopted recommended mating method, flushing and upgrading of animal. Regarding feeding practices, majority (93%) of the farmers fed green and dry fodder followed by feeding of concentrates (90%). None of the respondents fed green and dry fodder to bucks and feeding of milk to kids about 10% of body weight. In case of management practices, highest (87%) adoption level was found about feeding of animals followed by culling (79.5%) while none of the farmers provided recommended resting period to animals post-partum. Almost (91.5%) all the farmers practiced deworming of their animals followed by provision of protection against heat, cold, rain (84.5%), however, none of them vaccinated their animals against ET and PPR. A majority of farmers marketed the bucks based on apparent body weight and only a handful (8.33%) sold the animals in the organized market.

Key words : Goat rearing practices, breeding, feeding, management, health care practices

Goat rearing is an important enterprise not only for livelihood of the societies' weaker sections but also helps in meeting nutritional requirement of farm families in arid and semi-arid areas of Haryana. The total number of goat in the state of Haryana as per 2012 Census is 0.36 million. The district of Mahendragarh has the highest goat population of 14.82%. The second and third highest ranks go to Bhiwani and Sirsa districts with share of goat population of 13.79% and 11.30%, respectively (Anonymous, 2012). In order to make goat rearing a profitable enterprise, technologies have been developed by the research institutions both at national and international levels. Such improved practices developed have not been adopted by the farmers so far. Therefore, proper adoption of these improved practices by the goat farmers might be the only means to hasten further possible development in this sector. Keeping in view the above fact, a study was designed to ascertain the extent of adoption of recommended goat rearing practices (RGRP) by the goat farmers of West- Southern districts of Haryana.

MATERIALS AND METHODS

The present study was conducted in Haryana state. Out of 22 districts of the Haryana 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. In the next stage of sampling, two community development blocks were selected from each district. Siwani and Tosham blocks from Bhiwani district, Dabwali and Ellenabad blocks from Sirsa district &Mahendergarh and Kanina blocks from Mahendergarh district were selected randomly. Again, two villages from each block were selected randomly. A village-wise list of goat farmers were prepared and from the 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 goats from 41 to 80 and large flock sized goat farmers having more than 80 goats.

For the present study, the term adoption was operationalized as the new practices recommended by scientists after thorough research for the benefit of goat farmers and whether the goat farmers are using these practices over a period of time at the farm or not. For the measurement of adoption of recommended goat rearing practices, a pre-tested, structured interview schedule was developed. The entire recommended goat rearing practices were divided into five major aspects/domain areas namely breeding, feeding, management, health care, and marketing practices. Further, each broad aspect/ domain area was again split into items/sub-areas.

The respondents were asked to give their reply about adoption of these technologies/practices on three point continuum i.e. always adopted, sometimes and never adopted and scores of 2, 1 and 0 were allotted, respectively. The scores for each sub-area were then calculated by summing up the item-wise scores obtained in each sub-area. The overall adoption score for each respondent was then calculated by adding up all the scores obtained under each sub-area. For item-wise analysis, the mean score and mean per cent scores were calculated by

*Corresponding author: spsingh.vet@gmail.com

using the following formula:

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

Adoption mean per cent score =

$$\frac{\text{Mean score obtained for each item} \times 100}{\text{Maximum attainable score}}$$

The items obtaining maximum mean per cent score were ranked first and the next subsequent one were given the second rank and so on in descending order.

RESULTS AND DISCUSSION

Item-wise extent of adoption of RGRP by goat farmers

Breeding practices: Thirteen sub-practices were included in the domain of breeding practices and the item wise adoption of these practices is given in Table 1. On the whole, it can be seen that practices namely 'selection and purchase of quality animals', 'identification of animal in heat' and 'pregnancy diagnosis' were adopted by 54.5%, 26%, and 22% of farmers, respectively. None of them adopted 'mating time', 'flushing' and 'upgrading of animals'.

Evidently, the adoption level of large goat farmers was quite higher than medium and small goat farmers. Overall, most of the goat farmers had maximum adoption about the 'selection and purchase of quality animals'. The practices namely 'pregnancy diagnosis', 'season of breeding' and 'twinning in does' were occasionally followed by goat farmers at their goat farms. The possible reason behind it may be their poor education level, low socio-economic condition, low mass-media exposure, lack of training facilities and knowledge about importance of these practices. They never or rarely followed 'upgrading of animals' and 'first breeding age of doe' due to their lack of conviction and knowledge about these practices.

The findings were partially in line with the findings of Gautam (1998) who reported that A.I., heat detection, pregnancy diagnosis and breeding rest after kidding were not adopted by majority of the respondents. Kumar (2013) found average adoption indexes of reproduction and breeding management practices as 41.4, 40.12, 44.3% and 41.19% for landless, marginal, small and semi medium and overall categories of farmers, respectively.

Feeding practices: Thirteen important sub-practices were selected under feeding practices (Table 2). On the basis of the findings, it may be concluded that most of the goat farmers were following the practice of grazing of animals, practice of semi-intensive system of grazing and feeding of colostrum to newly born kids. The main reason for nearly full adoption of these practices shall be attributed to the availability of the grazing lands. However, none of the respondent was aware about its importance in worm management that reduces the reliance on anthelmintic interventions. They were also aware about the harmful effects of wet or moist grass. In the study area, there was plenty of availability of the canal water, most of farmers used canal water for drinking of animals during grazing. Almost all farmers were well aware about the benefits of colostrum feeding. The medium level of adoption was seen in the practices i.e. feeding of extra concentrate ration in advanced pregnancy, feeding of concentrate ration to buck and mineral mixture and vitamin supplementation to animals. Many goat farmers were not feeding concentrate mixture ration to pregnant does', while some of them offered a little amount of it. This may be due to lack of awareness, lack of training about recommended goat feeding practices and poor economic condition of the farmer. There was no adoption for the practices i.e.,

Table 1

Item-wise adoption level of goat farmers about breeding practices

Sr. No	Items/ Sub-areas	Small (n=40)			Medium (n=54)			Large (n=26)			Overall (n=120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Selection and purchase of quality animals	0.87	43.5	I	1.51	75.5	I	0.89	44.5	I	1.09	54.5	I
2	Castration	0.07	3.50	V	0.20	10.0	VI	0.20	10.0	VI	0.15	7.50	VI
3	Identification of animal in heat	0.20	10.0	III	0.80	39.5	III	0.56	28.0	III	0.52	26.0	II
4	Pregnancy Diagnosis	0.40	20.0	II	0.48	24.0	IV	0.46	23.0	IV	0.44	22.0	III
5	Follow up of AI	0.00	0.00	VI	0.07	3.50	VIII	0.09	4.50	VIII	0.05	2.50	VII
6	First breeding age of doe	0.00	0.00	VI	0.01	0.50	X	0.05	2.50	IX	0.02	1.00	VIII
7	Mating time	0.00	0.00	VI	0.00	0.00	XI	0.00	0.00	XI	0.00	0.00	IX
8	Upgrading of animals	0.00	0.00	VI	0.00	0.00	XI	0.01	0.50	X	0.00	0.00	IX
9	Help of veterinarian during kidding	0.07	3.50	V	0.03	1.50	IX	0.00	0.00	XI	0.03	1.66	VIII
10	Flushing	0.00	0.00	VI	0.01	0.50	X	0.00	0.00	XI	0.00	0.00	IX
11	Avoidance of use of same buck	0.00	0.00	VI	1.00	50.0	II	0.13	6.50	VII	0.37	18.50	IV
12	Season of breeding	0.17	8.50	IV	0.29	14.5	V	0.67	33.5	II	0.37	18.50	IV
13	Twinning in does	0.20	10.0	III	0.12	6.0	VII	0.26	13.0	V	0.19	9.50	V

M S =Mean score, MPS= Mean Percent Score

Table 2
Item-wise adoption level of goat farmers about feeding practices

Sr. No	Items/ Sub-areas	Small (n=40)			Medium (n=54)			Large (n=26)			Overall (n=120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Feeding of colostrum	1.10	55.0	IV	1.53	76.5	III	2.0	100.0	I	1.54	77.0	IV
2	Feeding of colostrums of other does	0.00	0.00	VII	0.00	0.00	IX	0.00	0.00	V	0.00	0.00	VIII
3	Feeding of milk to kid about 10% of its b.wt.	0.00	0.00	VII	0.00	0.00	IX	0.00	0.00	V	0.00	0.00	VIII
4	Feeding of concentrates (kids)	0.00	0.00	VII	0.30	15.0	V	0.70	35.0	IV	0.30	15.0	VII
5	Feeding of green and dry fodder	1.60	80.0	I	2.00	100.0	I	2.00	100.0	I	1.86	93.0	I
6	Feeding of concentrate	1.50	75.0	III	1.90	0.95	VII	2.00	100.0	I	1.80	90.0	II
7	Mineral mix. lick blocks to animals	0.00	0.00	VII	0.00	0.00	IX	0.00	0.00	V	0.00	0.00	VIII
8	Feeding of extra concen. in advanced pregnancy	0.40	20.0	V	0.82	0.41	VIII	1.20	60.0	II	0.80	40.0	V
9	Feeding of concen. to buck	1.25	62.5	IV	1.56	78.0	II	2.00	100.0	I	1.60	80.0	III
10	Feeding of green and dry fodder to buck	0.00	0.00	VII	0.00	0.00	IX	0.00	0.00	V	0.00	0.00	VIII
11	Mineral mixture and vitamin supplementation	0.10	50.0	VI	0.60	30.0	IV	0.80	40.0	III	0.50	25.0	VI
12	Grazing of animals	1.58	79.0	II	2.00	1.00	VI	2.00	100.0	I	1.86	93.0	I
13	Practice of semi intensive system of grazing	1.58	79.0	II	2.00	1.00	VI	2.00	100.0	I	1.86	93.0	I

M S =Mean score, MPS= Mean Percent Score

Table 3
Item-wise adoption level of goat farmers about Management practices

Sr. No	Items/ Sub-areas	Small (n=40)			Medium (n=54)			Large (n=26)			Overall (n=120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Flushing	1.10	55.0	III	1.50	75.0	II	1.82	91.0	II	1.47	73.5	III
2	Trimming	0.17	8.50	IX	0.00	0.00	VIII	0.00	0.00	VII	0.05	2.50	X
3	Weighing of animals	1.30	150	VII	0.46	24.0	V	0.72	36.0	IV	0.82	41.0	VI
4	Feeding of the animals	1.50	75.0	I	1.72	86.0	I	2.00	100.0	I	1.74	87.0	I
5	Dehorning and Disbudding	0.10	5.00	X	0.20	10.0	VII	0.40	20.0	VI	0.23	11.5	IX
6	Getting insurance of animals	0.27	13.5	VIII	0.40	20.0	VI	0.50	25.0	V	0.39	19.5	VIII
7	Culling	1.30	65.0	II	1.49	74.5	III	2.00	100.0	I	1.59	79.5	II
8	Resting period to parturated animals	0.00	0.00	XI	0.00	0.00	VIII	0.00	0.00	VII	0.00	0.00	XI
9	Providing housing	0.78	39.0	V	1.00	50.0	IV	1.00	50.0	III	0.92	46.0	V
10	Dipping	0.35	17.5	VI	0.46	24.0	V	0.72	36.0	IV	0.51	25.5	VII
11	Kids separate from dams	0.82	41.0	IV	1.00	50.0	IV	1.00	50.0	III	0.94	47.0	IV

M S =Mean score, MPS= Mean Percent Score

feeding of milk to kid about 10% of its body weight, feeding of green and dry fodder to buck according to its body weight. This might be due to their inability to compose the ration according to body weight of animal and due to their lack of awareness about importance of these practices.

The findings are somewhat similar to the findings of Kumaravel and Krishnaraj (2007), Narmatha *et al*. (2013) and Mandavkar *et al*. (2015). Similar findings were reported by Rashmi (2010), Kumar (2013) who found that goat keepers had low level of adoption of improved feeding practices. Gautam (1998) reported that feeding extra concentrates to lactating goats, pregnant goats and feeding colostrum were adopted by moderate number of respondents.

Management practices: Eleven sub-practices were included in management practices to ascertain adoption rate by the different categories of goat farmers (Table 3). Overall, analysis revealed that high adopted practices were 'feeding of animals', 'culling' and 'flushing' with 87%, 79.5% and 73.5%, respectively, whereas poorly adopted practices were 'trimming' (2.5%), 'insurance of the animals' (19.5 %) and 'dipping' (25.5 %).

Reason behind higher extent of adoption of 'feeding of animals' is to attain marketable weight, 'practice of culling' due to non-productive and non-economical performance of the animals, 'weaning of kid' to attain healthy and marketable weight and size. Medium level of adoption was observed in 'providing housing' to protect animals from extreme weather, theft and predators etc. The

housing for goat was open and mixed type with kutcha floor and boundary wall. It is perhaps because such type of shed is economical. All the animals of the herd were kept together without any separate provision for pregnant animals or rams, etc. Low adoption was noticed for dipping practice because all the farmers did not use any dipping chemical i.e. BHC, Lindane (0.25%), DDT (0.5%) etc. in preparation of dip solution. They used only canal water as dipping solution to remove waste material and dung. Almost no adoption was seen among goat keepers for proper resting period (105-120 days) to parturated animal due to lack of awareness about importance of it. Most of the farmers did not follow 'insurance practice' due to its complexity, lack of information of proper channel/procedure for it and poor educational level of farmers. Almost none of them followed 'trimming' due to unavailability of trimming instruments, due to lack of knowledge, lack of interest and unawareness about its benefits.

These findings are in accordance with the findings of Meena *et al.* (2011) who reported poor adoption for weaning among goat keepers, Narmatha *et al*. (2013) who found that 'insurance of animals' practice was adopted by few (1.43%) of goat farmers.

Health-Care practices: Thirteen sub-practices were included in health care practices (Table 4).

It may be concluded about adoption of healthcare practices that most of the farmers were deworming their animals; provide protection to animals against heat, cold and rain, and control of ectoparasites due to the high incidence of diseases, well awareness and veterinary facilities among the goat farmers. Almost all the farmers followed the practice of deworming on the advice of veterinary doctor but they did not continue at regular intervals due to lack of knowledge about the schedule of 'deworming'. Farmers used ectoparasiticides only after the recommendation of the veterinary doctor. The farmers housed their animals in night to get protection from cold and rain. The moderate level of adoption was seen for the practices i.e. vaccination of common diseases, consultation with veterinarian when animals are diseased, isolation of sick animal and sanitary practices among the goat farmers. Goat farmers vaccinated their animals due to well availability of veterinary facilities in the study area.

Table 4

Item-wise adoption level of goat farmers about health care practices

Sr. No	Items/ Sub-areas	Small (n=40)			Medium (n=54)			Large (n=26)			Overall (n=120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Deworming of animals	1.50	75.0	I	2.00	100.0	I	2.00	100.0	I	1.83	91.5	I
2	Care to sick animals	1.35	67.5	II	1.50	75.0	IV	1.70	85.0	V	1.51	75.5	V
3	Control of ectoparasites	1.25	62.5	III	1.72	86.0	II	2.00	100.0	I	1.65	82.5	III
4	Disinfection of naval cord	1.00	50.0	V	1.30	65.0	V	1.40	70.0	VI	1.23	61.5	VII
5	Isolation of sick animals	1.00	50.0	V	1.20	60.0	VI	1.80	90.0	IV	1.30	65.0	VI
6	Consultation with veterinarian	0.57	28.5	VII	1.20	60.0	VI	1.90	95.0	II	1.20	60.0	VIII
7	Vaccination of common diseases	0.50	25.0	VIII	1.00	50.0	VII	1.30	65.0	VII	0.93	46.5	X
8	Retention of placenta and metritis	0.62	31.0	VI	1.00	50.0	VII	1.30	70.0	VI	0.97	48.5	IX
9	Infertility and orchitis in male	0.27	13.5	X	0.40	20.0	IX	0.70	35.0	IX	0.45	22.5	IX
10	Brucellosis,T.B,J.D etc. testing	0.40	20.0	IX	0.70	35.0	VIII	1.19	59.5	VIII	0.76	38	XI
11	Provision of protection against heat, cold, rain etc.	1.07	53.5	IV	2.00	100.0	I	2.00	100.0	I	1.69	84.5	II
12	Vaccination against E.T and P.P.R at regular interval	0.00	0.00	XI	0.00	0.00	X	0.00	0.00	X	0.00	0.00	XII
13	Sanitary practices	1.25	62.5	III	1.52	76.0	III	1.84	92.0	III	1.53	76.5	IV

M S =Mean score, MPS= Mean Percent Score

ÇÃ'á 5

Item-wise adoption level of goat farmers about Marketing practices

Sr. No	Items/ Sub-areas	Small (n=40)			Medium (n=54)			Large (n=26)			Overall (n=120)		
		MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1	Marketing of buck	1.70	85.0	I	1.00	50.0	II	1.20	57.0	III	1.30	65.0	I
2	Marketing of buck kids	1.30	65.0	II	0.80	40.0	III	0.60	30.0	V	0.90	45.0	IV
3	Selling in organised market	0.00	0.00	V	0.50	25.0	V	0.00	0.00	VII	0.16	8.33	VII
4	Consideration of b.wt and physical appearance at the time of selling	1.30	65.0	II	1.00	50.0	II	0.80	40.0	IV	1.03	51.5	II
5	Selling of animals to butcher	1.00	50.0	III	0.82	37.0	IV	1.20	60.0	II	1.00	50.0	III
6	Selling of animals in local market	0.45	22.5	IV	0.20	10.0	VI	0.40	20.0	VI	0.35	17.5	VI
7	Selling of animals in pashumela	0.00	0.00	V	1.02	60.0	I	1.32	64.0	I	0.78	39.0	V

M S =Mean score, MPS= Mean Percent Score

However, they could not tell about the schedule and disease against which animals were vaccinated. Most of the farmers gave their own treatment to the animals then followed the advice of other progressive goat farmers and in last they made contact with the nearby veterinary representative due to their fear of high cost of medicine/treatment, lack of knowledge about improved health-care practices, poor extension agency contact and high faith in the *desi* treatment. Low adoption was found in case of 'vaccination against E.T. and PPR at regular interval', 'Brucellosis, T.B., J.D., etc. testing' due lack of awareness, training and poor extension personnel contact.

These findings are in accordance with the finding of Kumaravel and Krishnaraj (2007) who found that deworming and vaccination were more adopted by majority of the participant farmers in Pudukottai district of Tamil Nadu. Tanwar and Rohilla (2012) observed that only 23% of the farmers adopted vaccination against common infectious diseases in Jaipur district of Rajasthan. Similar findings were also reported by Senthilkumar *et al*. (2013) and Narmatha *et al*. (2013).

Marketing practices: Seven sub-practices were identified under marketing practices to ascertain the extent of adoption by the different categories of goat farmers(Table 5). It is clearly that farmers have moderate level of adoption regarding marketing of animals because mostly they have marketed their animals to goat merchants who routinely visited villages to purchase goat or local market butchers, followed by in 'pashu melas' and then other goat farmers of village. Farmers rarely marketed their animals directly to slaughter house. Further some of the goat farmers considered 'body weight and physical appearance at the time of selling' because mostly they market buck kids at 3 months of age and 12 kg of body weight. Almost no adoption was observed regarding 'selling animal in organized market'. It was mainly due to lack of knowledge about marketing practices, small flock size, poor educational level, low mass-media exposure, high morbidity and mortality rate, lack of credit facility, lack of proper marketing channels, poor production level because most of farmers rear local breeds.

Almost similar findings were also reported by Kumaravel and Krishnaraj (2007) who found that 66 per cent of goat farmers marketed buck kids at 8 months of age in Pudukottai district of Tamil Nadu.

REFERENCES

Anonymous(2012).http://pashudhanharyana.gov.in/html/pdf%20&%20downloads/LC%202012/Districtwise%20Livestock%20Census%202012.pdf

Gautam, M. (1998). Contribution of rural women in goat husbsndry. M.Sc. thesis, IVRI, Izatnagar, Uttar Pradesh.

Kumar, V. (2013). Adoption of improved technologies and production status with reference to goat husbandry in semi arid Zone of Uttar Pradesh. Ph. D thesis, IVRI, Izatnagar, Uttar Pradesh

Kumaravel, P. and Krishnaraj, R.(2007). Adoption of improved sheep and goat husbandry practices in Pudukottai district of Tamil Nadu. *The Indian J. Small Rumin*.**13(1):** 45-50.

Mandavkar, P.M., Hanmante, A.A. and Talathi, M.S.(2015). Status of goat farming practices: Knowledge and adoption status of technologies in North Konkan Coastal Zone of Maharashtra. *J. Krishi Vigyan*. **3(2)**: 93-96.

Meena, M.L., Singh, H.C., Dudi, A., Kumar, A. and Chauhan, S.V.S.(2011). Goat keepers' adoption about improved goat production practices. *Indian Res. J. Ext. Edu.***11** (1): 39-43

Narmatha, N., Sakthivel, K.M., Uma,V. and Akila,N.(2013). Adoption and constraints in improved goat rearing practices. *Indian J. Anim. Res.* **47** (6): 547-55

Rashmi (2010). Goat rearing practices in ravines region of Etawah district of Uttar Pradesh. MVSc Thesis, IVRI, Izatnagar, Bareilly, Uttar Pradesh.

Senthilkumar,K., Devaki, K and Subramanian, R.(2013). Impact of Krishi Vigyan Kendra's trainings on knowledge and adoption of sheep and goat farming technologies. *The Indian J. Small Rumin*. **19** (2): 228-231.

Tanwar P.S and Rohilla P.P. (2012). Goat management practices adopted by farmers in Jaipur district of Rajasthan. *Indian J. Small Rumin.* **18(1):** 121 – 124.