RESEARCH ARTICLE

Breeding, Healthcare and Marketing Practices of Goat Followed in Middle Gujarat

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Abstract

A study was conducted in selected areas of Dahod and Kheda districts of Middle Gujarat to ascertain the breeding, health care and marketing management practices followed by goat keepers. The data was collected from randomly selected 240 goat keepers through personal interview with the help of pre-tested structured interview schedule. The study revealed that majority of goat keepers (96.67%) followed a flock mating system and bred their goats throughout the year (58.75%) by use of own flock buck (72.92%). More than two third of goat keepers (67.08%) followed some controlled breeding criteria in a flock and more than half of the respondents (56.67%) selected the breeding buck based on physical characteristics. About 57.50 % of goat keepers practiced estrus symptoms in doe, *viz*., frequent bleating and buck-doe seeking behavior followed by tail wagging and mounting on another goat (42.50%). Only one fifth (20.0%) of goat keepers implemented to vaccinate their adult goats and majority of goat keepers (77.08%) got treated their sick goats by local quack or used home-made remedy and least treated by veterinary doctors. Majority of goat keepers (65.42%) isolated the sick goats from healthy flock and 74.58% practiced the disposal of placenta on thorny hedge or tree. Most goat keepers (70.42%) sold adult does/bucks and male youngsters from the flock to raise money for their families throughout the year, and they marketed adult goats when they were between 12 and 18 months old (72.50%) to increase their selling price based on the body weight and age of the goat (75.0%). Most goat keepers (98.75%) sold their goats straight into the local market (haat) (65.83%) during the festive season, followed by 34.17% who sold to middlemen or villagers' residents. The optimal breeding season was less common in the Kheda district, and there were disparities between districts more in the regulated (controlled) breeding practises, breeding buck selection criteria, isolation of sick goats, and goat marketing channels.

Key words: Goat keepers, Healthcare, Marketing Management, Middlemen, Middle Gujarat.

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Introduction

Goat farming plays an important and vital role in providing nutritive food and in supplementing family incomes and generating gainful employment in the rural sector, particularly among the landless, small, and marginal farmers. These resources provide a vast range of products and various services such as immediate cash income, meat, milk, skin, manure, risk management and social functions to many smallholder farmers in the country (Adane and Girma, 2008). They also serve as sources of foreign currency through meat and live animal exports (Berhanu *et al*., 2006) and have various social and cultural values. The goat population in the India in 2019 was 148.88 million and in Gujarat state about 4.867 million, where Dahod and Kheda districts occupied 0.50 and 0.102 million goats, respectively (Anonymous, 2019). Goat farming has tremendous potential for income and employment generation, especially in rural areas (Singh *et al*., 2013). The productivity of goats under the prevailing traditional extensive production system is low (Singh and Kumar, 2007) mainly because of feed scarcity and lack of adoption of improved technologies and management practices. This sector can change the economy of rural areas if proper attention is paid. The economic standing of goat producers improves if better scientific management techniques are adopted. Therefore, the present study was undertaken to collect the information regarding prevailing breeding, healthcare and marketing management practices followed by the goat keepers of middle Gujarat.

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Materials and Methods

A survey study was conducted in randomly selected four talukas each from Dahod and Kheda districts of middle Gujarat. From each selected taluka, five villages and from each village six goat keepers were randomly selected. Thus,

total 240 respondents were included in this study. A pre-tested structured interview schedule was used to collect the relevant information regarding the existing breeding, healthcare and marketing management practices followed by goat keepers by research personnel, keeping in view the objectives of the study. According to prevailing conditions in selected study area, different management practices of goat rearing were followed by goat keepers. Data was tabulated and analyzed as per standard statistical tools like frequency and percentage to draw meaningful inference (Snedecor and Cochran, 1994).

Results and Discussion

Breeding Management Practices

The data depicted in Table 1 regarding existing breeding practices followed by goat keepers suggested that most of the goat keepers in both districts (97.50 and 95.83 %) followed a flock mating system, which concurred with the reports of Ekambaram *et al*. (2011) and Mordia *et al*. (2018). About 33.33 and 84.17 % of them allowed their goat to be bred throughout the year in Dahod and Kheda districts, respectively, whereas a least followed ideal breeding season *i.e.,* winter, autumn and summer. Most of them (96.67%) used a flock buck for breeding and implemented to prevent unwanted breeding by restraining a buck in a separate shed (51.67%) followed by 45.83 % applying rubber ring or string on spermatic cord in Dahod district, whereas the goat keepers of Kheda also used own flock buck as well as village buck for breeding as per availability and 63.33 % had not adopted any method to avoid unwanted breeding in flock. In Dahod and Kheda district, about 75.0 and 38.33 % of the respondents, respectively, selected a breeding buck based on physical characters. Three fifth (60.0%) of the respondents did not employ any selection criteria for breeding buck in Kheda district. In general, tail wagging, mounting on other goats, frequent bleating and doe-buck company behavior like signs of estrus doe were followed by the respondents in both districts.

Overall, it was observed that more than half of the respondents (58.75%) bred their goats throughout the year, *i.e.,* did not adopt any specific breeding season. Majority of the goat keepers used their own flock buck for breeding purpose as has been reported by Thiruvenkadan *et al*. (2005) and overall, more than two third of goat keepers (67.08 %) followed some controlled breeding criteria in flock. Overall, more than half (56.67%) of the respondents selected a breeding buck based on physical characteristics. These results are in agreement with the findings of Sharma *et al*. (2007) and Ekambaram *et al*. (2011). Also, predominant heat symptoms, *viz;* frequent bleating and buck-doe seeking behavior followed by tail wagging and mounting on other goats were used to detect estrus doe. Sharma *et al*. (2007) reported that most common symptoms of heat detection in goats were bellowing and rapid tail movement. On the contrary, Mordia *et al*. (2018) reported that most of goat owners bred the goats during rainy season and selected the buck based on body weight.

Some breeding management practises were applied equally in both districts studied, with the exception of the ideal breeding season, controlled breeding techniques, and breeding buck selection criteria, which were more common in Dahod district and less common in Kheda district (Table 1).

Healthcare Management Practices

The data depicted in Table 2 regarding existing healthcare practices followed by goat keepers suggested that only 12.50 and 27.50 % of the respondents vaccinated their goats in both districts, and most of them treated their sick goats through a local quack or used home-made remedy followed by veterinary doctors in both districts. Moreover, periodical hoof trimming was not practiced in Dahod district, while it was a least practiced by respondents (7.50%) in Kheda district. Most of goat keepers (97.50%) in Dahod district did not isolate sick goats from healthy flock and about 95.0 % disposed the placenta on thorny hedge followed by buried it in soil (5.0%). In Kheda district, it was observed that one third (33.33%) of them practiced to isolate sick goats from healthy flock and about 54.17 % of goat keepers disposed the placenta on thorny hedge followed by disposal by throwing away from shelter (35.83%) and only 10.00 % of them buried the placenta in the soil.

Overall, it was observed that most of the goat keepers (80.0%) did not vaccinate their adult goats and treated their sick goats by local quack or used home-made remedy, whereas a few of them (22.92%) treated their sick goats by veterinary doctors. Similar finding was reported by Lavania *et al.* (2014), that only 20.0 % of the respondents acquired the services of a qualified veterinarian for treatment. Most of the goat-keepers of the study area used local therapy for the treatment of their goats and very few respondents (25.0%) practiced de-worming to their animals at regular intervals as reported by Lavania *et al.* (2014). Majority of the goat keepers (65.42%) followed isolation of sick goats from healthy flock and very few (3.75%) practiced periodical hoof trimming in goats. It was found that majority of the goat keepers (74.58%) practiced the disposal of placenta on thorny hedge or tree followed by 17.92 % of them throwing it away from shelter. In contrast, Sabapara *et al.* (2014) revealed that nearly 49.0 % of the goat owners adopted vaccination against HS, FMD and Enterotoxaemia diseases and about 85.0 % of the goat owners preferred para veterinarian for treatment of their sick animals. Tanwar *et al.* (2007) revealed that the placenta was disposed of either by throwing near the village premises or by burying in the soil.

Most healthcare management practises were found to be widespread among the two districts studied, but several crucial practises, such as immunisation and veterinary professional treatment of sick goats, were not widely used in either district (Table 2).

Table 1: Breeding management practices followed by the goat keepers

Sr. No.	Breeding management	Number of respondents					
		Dahod (n=120)		Kheda (n=120)		Total (n=240)	
		N	%	N	%	N	%
1	**Mating system**						
	Flock mating	117	97.50	115	95.83	232	96.67
	Pen/ Individual mating	3	2.50	5	4.17	8	3.33
2	**Breeding season**						
	Summer (March-May)	26	21.67	13	10.83	39	16.25
	Autumn (Sept. to Nov.)	36	30.00	3	2.50	39	16.25
	Winter (Dec. to Feb.)	18	15.00	3	2.50	21	8.75
	Throughout year-Not specific	40	33.33	101	84.17	141	58.75
3	**Buck used for breeding purpose**						
	Own flock buck	116	96.67	59	49.17	175	72.92
	Another buck from village	4	3.33	61	50.83	65	27.08
4	**Method to prevent unwanted breeding**						
	To restrain buck in separate	62	51.67	7	5.83	69	28.75
	To apply rubber ring or string on testicle cord	55	45.83	37	30.83	92	38.33
	Not adopted any method	3	2.50	76	63.33	79	32.92
5	**Basis of selection criteria for breeding buck**						
	Pedigree/breed performance	0	0.00	2	1.67	2	0.83
	Physical characteristics	90	75.00	46	38.33	136	56.67
	Not adopted any criteria	30	25.00	72	60.00	102	42.50
6	**Signs followed to detect the estrus doe**						
	Tail wagging and mounting on another goat	78	65.00	24	20.00	102	42.50
	Frequent bleating and doe find buck company	42	35.00	96	80.00	138	57.50

Table 2: Health-care management practices followed by the goat keepers

		Number of respondents					
		Dahod (n=120)		Kheda (n=120)		Total (n=240)	
Sr. No.	Health care management	N	%	N	%	N	%
1	**Vaccinate the adult goats**						
	Yes	15	12.50	33	27.50	48	20.00
	No	105	87.50	87	72.50	192	80.00
2	**Treat the sick goat by**						
	Veterinary doctors	30	25.00	25	20.83	55	22.92
	Local quack/ use home-made remedy	90	75.00	95	79.17	185	77.08
3	**Practice periodical hoof trimming**						
	Yes	0	0.00	9	7.50	9	3.75
	No	120	100.0	111	92.50	231	96.25
4	**Isolate sick goat from healthy flock**						
	Yes	117	97.50	40	33.33	157	65.42
	No	3	2.50	80	66.67	83	34.58
5	**Disposal of placenta by**						
	Burial in soil	6	5.00	12	10.00	18	7.50
	Thrown away from shelter	0	0.00	43	35.83	43	17.92
	Hanged on thorny hedge/tree	114	95.00	65	54.17	179	74.58

Table 3: Marketing management practices ollowed by the goat keepers

		Number of respondents					
		Dahod(n=120)		Kheda(n=120)		Total(n=240)	
Sr. No	Marketing management	N	%	N	%	N	%
1	**Preference given to sell surplus goats**						
	Male kid, adult doe/buck	115	95.83	54	45.00	169	70.42
	Any class of goat	5	4.17	66	55.00	71	29.58
2	**Preference given to market the goats at age of**						
	12-18 months	79	65.83	95	79.17	174	72.50
	19-24 months	8	6.67	25	20.83	33	13.75
	Above 24 months	33	27.50	0	0.00	33	13.75
3	**Marketing price of goats fixed on**						
	Body weight of goat	7	5.83	1	0.83	8	3.33
	Age of goat	3	2.50	46	38.33	49	20.42
	Body weight and age of goat	110	91.67	70	58.33	180	75.00
	Group auction	0	0.00	3	2.50	3	1.25
4	**Preference given to goat selling market channel**						
	Sell to local market/*haat*	114	95.00	44	36.67	158	65.83
	Middlemen/ consumer on farm	6	5.00	76	63.33	82	34.17
5	**Preference given to marketing season for selling of goats**						
	Festive season	117	97.5	120	100	237	98.75
	Need base during the year	3	2.5	0	0.00	3	1.25
6	**Site for storage of goat manure**						
	Separately on ground	0	0.00	44	36.67	44	18.33
	Separately in kutcha pit	0	0.00	2	1.67	2	0.83
	Store on top ground mix with farm waste	120	100.0	74	61.67	194	80.83
7	**Use of goat manure**						
	FYM in own farm	117	97.50	22	18.33	139	57.92
	Sell to another / Nursery person	3	2.50	98	81.67	101	42.08

Marketing Management Practices

The data presented in Table 3 regarding existing marketing practices followed by goat keepers portray that in Dahod district, which is similar to Kheda district, most respondents (95.83%) sold surplus male kids or adult bucks and does at 12-18 months of age (65.83%), followed by at or above 24 months of age (27.50%), during the festive season (97.50%) in local market (*haat*) based on body weight and age of goats, with the exception of most goats in Kheda district sold to middlemen (63.33%) and in local market. In the Dahod district, all goat keepers stored goat manure on top ground combined with farm waste for future use as FYM; in the Kheda district, 61.67 % of them did the same, followed by 36.67 % stored it separately on ground for sale to nursery personnel and least used as FYM.

Overall, majority of goat keepers in the two districts (70.42%) sold their male young and mature does and bucks within a year of age due to pressing financial necessities. During the festival season, many of them (72.50%) sold an adult goat when it was between 12 and 18 months old to middlemen and or consumers in villages in order to get a better market price depending on the body weight and age of the live goat. Similar findings were reported by Sharma *et al.* (2007), Rao *et al.* (2008) and Sakthivel *et al.* (2012) that most of respondents preferred to sell their goats in village market and nearby city through middlemen on festivals on body weight basis. Present findings are also well supported by Tanwar and Rohilla (2012) that most of farmers sold goats to the local traders in their own villages.

Conclusions

From the findings of the present study, it was concluded that most goat keepers (96.67%) used a flock mating system using own buck chosen based on physical traits, and 67.08% followed regulated breeding criteria. Frequent bleating, buck-doe seeking behavior, tail wagging, and mounting on other goats were the major criteria used to identify a doe in heat. Only 20.0% of goat caretakers vaccinated their adult goats, and the majority had treated their sick goats by local quack or with homemade remedies. Mostly the placenta was disposed on thorny hedge or trees. Male kids and adult does /bucks from the flock were sold every year for family need during festive season through middlemen or directly to the consumers of villages. Majority of them marketed their adult goats at age of 12-18 months for getting more selling value. However, to boost flock productivity and goat keepers' financial circumstances, it is necessary to setup an organized goat market and to adhere to some ideal practices *i.e.*, autumn breeding season for healthy kids, timely vaccination, pre- and post-monsoon deworming, timely estrus detection and post-kidding breeding to a greater level in study area.

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