



Housing, breeding and management practices of Mahabubnagar goats

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ABSTRACT

A study on Mahabubnagar goats of Andhra Pradesh was carried out in 150 households of 56 villages in Mahabubnagar, Nalgonda and Ranga Reddy districts for cataloguing management practices of Mahabubnagar goats. The study revealed that closed type of housing system was adopted by 60% of farmers with thatched roof and *kutch* floor. The common feeding practice was grazing (72%), while 27.33% farmers supplemented their animals with concentrates, crop byproducts, etc. during lean periods. The overall flock size was 43.69 ± 1.70 and 58% farmers maintained 26 to 50 goats per flock under field conditions. Majority of the farmers followed 1:21 to 30 sex ratio in their flocks and they did not rotate the breeding bucks as well as did not select breeding males and females. Deworming (82.08%), deticking (6.67%) and vaccination (18.67%) schedules were followed as preventive health measures. Most of the goats were disposed off at villages as per the wishes of butcher, middlemen and traders based on the animal size and shape.

Key words: Breeding practices, Management Practices, Feeding, Goats

India is a rich repository of goat genetic resources in the form of 20 well defined goat breeds. Andhra Pradesh does not have an established goat breed, in spite of 6.27 million goat population and Mahabubnagar district in Andhra Pradesh tops in goat population with 5.09 lakh (Livestock census 2003). Mahabubnagar goats, though yet to be recognized as a breed, are well known for their production potential. The information on flock dynamics, housing, feeding, breeding and health management practices etc. in respect of Mahabubnagar goats had not been documented. Therefore, a systematic survey was undertaken to study the existing provisions of housing, feeding, breeding and health management practices followed by farmers for rearing of Mahabubnagar goats under field conditions and the resulting information will be useful for characterization, planning for sustainable improvement, conservation and utilization of the Mahabubnagar goats.

MATERIALS AND METHODS

The information on Mahabubnagar goats utilized for the present study were collected from Mahabubnagar, Nalgonda and Ranga Reddy districts of Andhra Pradesh during 2006–

07 in the proforma given by National Bureau of Animal Genetics Resources (NBAGR), Karnal. In the present study, 5 divisions in Mahabubnagar district, viz. Gadwal, Mahabubnagar, Nagarkurnool, Narayanpet and Shadnagar and adjacent divisions of Chevella in Ranga Reddy and Deverakonda in Nalgonda districts were chosen to undertake studies on Mahabubnagar goats under field conditions. In each division, a two stage stratified sampling technique was applied, wherein 2 to 4 mandals within each division and 2 to 4 villages in each mandal and 3 goat farmers per village were selected randomly to obtain data. Information on feeding, breeding, housing, health management practices were collected through formal interviews, using a structured questionnaire, from 150 farmers maintaining goat flocks in the breeding tract and spread over 20 mandals and 56 villages, including 3 livestock *shandies*.

RESULTS AND DISCUSSION

Flock management: In the present study, the overall flock size observed was 43.69 ± 1.70 . It was found that 58% farmers maintained 26 to 50 goats per flock, 21.33% goat rearers kept 51 to 75 animals per flock and only 2 to 4% farmers maintained 100 animals and above in the flock (Table 1). Similar results on average flock size were noticed in Maharashtra goat farmers by Gokhale *et al.* (2002), while Thiruvankadan *et al.* (2005) reported an average flock size of 25.3 in KanniAdu goats of Tamil Nadu and Shalender Kumar *et al.* (2006) recorded 9.24 to 22.55 goats/house hold

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in Uttar Pradesh. Dixit *et al.* (2007) in Marwari and Verma *et al.* (2007) in Jakhrana reported that the flock size varied from 5 to 100 and above 100 (large flock) in Rajasthan, which is similar to the present finding. However, large flock sizes were reported in Kutchi goats (Acharya 1982 and Kumar *et al.* 2006) and Ganjam (Rao *et al.* 2007) goats.

About 94.67% goat rearers adopted stationary type of keeping and only 2.67% farmers followed migration system based on the availability of browsing materials during different seasons. This may be due to the abundant availability of browsing materials from forests, cropping, pastures etc. which is in concordance with the report on Jakhrana (Verma *et al.* 2007) and Marwari (Dixit *et al.* 2007). Above 50% farmers were providing 7 to 8 h grazing time to the animals maintained under stationary system of rearing, while 48% goat rearers practice 8 h and above grazing duration in fields. Daily 6 to 10 km distance was covered by farmers for grazing their goats in search of feed. Similar results were reported in Kanni Adu (Thiruvankadan *et al.* 2005) and Kutchi goats (Arun Kumar *et al.* 2006) while Rao *et al.* (2007) reported 15 to 30 km grazing distance in Ganjam goats. In the present study, the results indicated that the grazing land types were community (2%), wastelands (2%), forests (1.33%) and all types of grazing land contribute highest value 28.67% while, different combinations of grazing lands includes 36% (community and waste land) and 20% (forest and waste lands). Therefore, the forest and waste lands and community lands were observed to be important resources for goat rearing.

In the field survey, it was found that all farmers did not practice weaning in goat flock. Most of the farmers in field were disposing kids at early age indirectly complementing the weaning process in villages.

Housing: We observed that 94.67% farmers provided housing during night time to protect them from the wild animals and thefts, whereas 2% farmers housed their animals during day time (Table 1). The closed type of houses were commonly provided by nearly 60% farmers, followed by 40% of goat rearers who adopted open type of houses. The closed houses were fenced with wooden or stone poles or thorny bushes, walls constructed with locally available materials. In contrary to the closed houses, the animals were kept under trees, open areas, foothills etc. Majority of the farmers (81.76%) used *kutch* type of floors in goat houses, while 14.86% farmers provided *pucca* type of floor in shelter. In villages *kutch* floor was prepared with locally available *morram* and gravel at a cheaper price, which provides coolness in summer and warmth during winter as well as quick absorption of moisture resulting from urine, defecations etc. Conventional thatched roof was used by 52.70% farmers, while 18.24% used asbestos roof and 29.05% farmers used tiles, iron and plastic sheets, polyethylene covers and cement roofs. Thatched roof was of low cost, hence most of the farmers planned with locally available materials like paddy

straw, *tunga*, maize and *jowar* straws, forest tree leaves, bushes etc.

It was found that 63.51% farmers constructed the shelters separately while 36.49% farmers maintained shelters as part of their houses to safeguard the animals during night time. Singh (2001) and Gokhale *et al.* (2002) reported that 66% of farmers maintained shelters as part of residence.

The results on type of house, thatched roof and *kutch* floor systems adopted by Mahabubnagar goat farmers in the study were in close proximity to the findings of Singh (2001) in Uttar Pradesh, Gokhale *et al.* (2002) in Maharashtra, Thiruvankadan *et al.* (2005) in Tamil Nadu, Kumar *et al.* (2006) in Gujarat, Dixit *et al.* (2007) in Rajasthan, Rao *et al.* (2007) in Odisha and Verma *et al.* (2007) in Rajasthan states.

Feeding: The most commonly used practice of feeding was grazing, observed in 72% of goat keepers, while 27.33% farmers were supplementing their animals with concentrates, crop byproducts, etc. after returning from grazing especially during lean periods (Table 1). A negligible proportion (0.67) of farmers followed stall feeding in the study areas. Availability of common resource properties, community lands and forests and crop by products could be the reasons behind the adoption of extensive system of rearing and low cost for maintenance under field conditions. Most of these findings are in agreement with the reports published on Barbari goats in Uttar Pradesh (Shalender and Deoghse 2003), Jakhrana goats in Rajasthan (Rai and Singh 2004), Kanni Adu goats in Tamil Nadu (Thiruvankadan *et al.* 2005), Kutch goats in Gujarat (Arun kumar *et al.* 2006), Marwari in Rajasthan (Dixit *et al.* 2007), Ganjam goats in Odisha (Rao *et al.* 2007) and Jakhrana goats in Rajasthan (Verma *et al.* 2007).

Nearly 54% farmers adopted supplementation during fodder scarcity periods and most of the farmers followed (98%) group feeding rather than individual feeding to save the time. We observed that 37.33% farmers procured feed from fields, 9% by purchase while 41.33% farmers purchased as well as collected from fields. This may be due to a large section of landless and marginal farmers maintaining goats as main source of income.

In the present survey, 71.33% farmers were providing water, both at the house and during grazing time and 26% at grazing time only.

Breeding: The survey revealed that 54.67% farmers followed an optimum sex ratio of 21 to 30 females to one breeding buck while 36% of the farmers allowed one buck up to 20 does and 9.33% farmers maintained 1 male for above 30 females (Table 1). The results indicated the optimum sex ratio of 1 : 20 to 30 which might help in obtaining higher kidding%, lower kid mortality due to reproductive problems and maintenance of genetic distance among progeny. Dixit *et al.* (2007) reported sex ratio of 1:20 to 100 in Marwari and Verma *et al.* (2007) 1:25 to 60 sex ratio in Jakhrana goats, which were higher than the present study in Mahabubnagar goats. In the field conditions, nearly 74.67% farmers did not

Table 1. Management practices of Mahabubnagar goats

Characters	Category	n	%	Characters	Category	n	%
<i>Flock management</i>							
Flock size	Up to 25	22	14.67		Collected from field	56	37.33
	26-50	87	58.00		Home grown and collected from field	15	10.00
	51-75	32	21.33		Purchased and collected from field	62	41.33
	76-100	6	4.00	Watering (n, 150)	At housing	4	2.67
	Above 100	3	2.00		At grazing	39	26.00
	Mean	43.69	-		Both	107	71.33
	SE	1.70	-				
Practice of animal rearing (n, 150)	Migration	4	2.67	<i>Breeding</i>			
	Stationary	142	94.67	Sex ratio (1 male to x no. of females) (n, 150)	Up to 20	54	36.00
	Migration and stationary	4	2.67		21-30	82	54.67
Migration Period (months) (n, 8)	Up to 5	2	25.00		Above 30	14	9.33
	6-11	2	25.00	Heat detection (n, 150)	Practiced	3	2.00
	Above 12	4	50.00		Not practiced	147	98.00
Duration of grazing (hrs) (n, 150)	7 to 8	78	52.00	Type of mating system followed (n, 150)	Hand mating	3	2.00
	Above 8	72	48.00		Flock mating	146	97.33
Grazing Land type (n, 150)	Community lands	3	2.00	Rotation of breeding bucks (n, 150)	Both	1	0.67
	Waste lands	3	2.00		Done	38	25.33
	Forests	2	1.33		Not done	112	74.67
	All types	43	28.67	Castration (n, 150)	Practiced	3	2.00
	Community and forest lands	15	10.00		Not practiced	147	98.00
	Community and waste lands	54	36.00	Selection among breeding animals (n, 150)	Practiced	25	16.67
	Forests and waste lands	30	20.00		Not practiced	125	83.33
Weaning (n, 150)	Followed	0	0.00	Culling (n, 150)	Practiced	125	83.33
	Not followed	150	100.00		Not practiced	25	16.67
<i>Housing</i>				<i>Health management</i>			
Provision of shelter (house) (n, 150)	Day time	3	2.00	Deworming (n, 150)	Practiced	106	70.67
	Night time	142	94.67		Not practiced	44	29.33
	Day and night	3	2.00	Frequency of deworming/year (n, 106)	One time	12	11.32
	None	2	1.33		Two times	87	82.08
Nature of shelter (house) (n, 148)	Separate house	94	63.51		Three times	7	6.60
	Part of residence	54	36.49	Ectoparasites control Measures (n, 150)	Followed	10	6.67
Type of house (n, 148)	Open	58	39.19	Vaccination (n, 150)	Not followed	140	93.33
	Closed	90	60.81			Practiced	28
Type of floor (n, 148)	<i>Kutcha</i>	121	81.76		Not practiced	122	81.33
	<i>Pucca</i>	22	14.86	Treatment of sick animals (n, 150)	Self medication	10	6.67
	Others (bamboo, wooden etc.)	5	3.38			At veterinary dispensary / hospital	107
Type of roof (n, 148)	Asbestos	27	18.24		Both	33	22.00
	Thatched	78	52.70	Consultation (n, 150)	Doctor	91	60.67
	Others (tiles, plastic, iron sheets, polythene covers, cement)	43	29.05			Experienced goat keepers	3
						Self experience	5
					Doctor and experienced goat keepers	38	25.33
					Self experience and experienced goat keepers	13	8.67
<i>Feeding</i>							
Feeding practice (n, 150)	Grazing	108	72.00	Mode of disposal of diseased animals (n, 150)	Sale	131	87.33
	Stall feeding	1	0.67			Self consumption	8
	Grazing and supplementation	41	27.33		Others	11	7.33
Feed supplementation (n, 150)	Yes	81	54.00	Mode of disposal of dead animals (n, 150)	Selling	9	6.00
	No	69	46.00			Burying	44
Feeding nature (n, 150)	Individual feeding	3	2.00		Tying to trees	4	2.67
	Group feeding	147	98.00		Selling and burying	31	20.67
Source of fodder (n, 150)	Home grown	3	2.00		Burying and tying to trees	13	8.67
	Purchased	14	9.33				

(Contd...)

(Concluded Table 1)

Characters	Category	n	%
Mortality % in the flock per annum (n, 150)	Others (consumption, throwing away etc.)	49	32.67
	Total	150	100.00
	Up to 5	17	11.33
	6 to 10	90	60.00
	11 to 15	41	27.33
Diseases encountered in the flock (n, 150)	Above 15	2	1.33
	Foot-and-mouth disease	49	32.67
	Peste des petits ruminants	71	47.33
	Pox	14	9.33
	Enterotoxaemia	19	12.67
	Anthrax	7	4.67
	Pneumonia	131	87.33
	Contagious ecthyma	118	78.67
	Mixed	5	3.33

Veterinarians, 2% consulted experienced goat keepers and 23.33% consulted both veterinarians as well as experienced farmers.

rotate their breeding bucks and only 25.33% farmers changed the bucks by means of exchange, replacement etc. As this may lead to inbreeding, lower fertility rate and lower body weights at various ages, the farmers need to be made aware of the advantage of rotating breeding bucks.

Health management: Deworming, deticking and vaccination schedules are some of important disease preventive measures (Table 1). In the present study, 70.67% farmers followed deworming to control parasites. Majority of the (82.08%) farmers practiced de-worming twice a year, 11.32% farmers practiced one time only and 6.6% farmers did this thrice. The prescribed ectoparasitic control measures like deticking was not practiced by 93.33% farmers surveyed. Majority of the farmers (81.33%) were not following vaccination schedules in protecting their animals against different infectious diseases. This could be due to lack of awareness and misconception among farmers particularly shepherds. While, Kumar *et al.* (2007) reported regular deworming and vaccination schedules in Kutchi goats.

The survey revealed that 71.33% farmers utilized the nearby veterinary dispensary or hospital for the treatment of sick animals, whereas 6.67% farmers followed self medication, while 22% farmers used both the veterinary dispensaries and self medication in attending sick animals. It indicates the awareness among farmers about treatment to the diseased goats. About 60.67% of the goat keepers consulted.

The heat detection practice was followed only by 2% farmers. On the other hand 97.33% farmers followed flock mating which was a common practice among goat keepers wherein, the breeding buck was allowed with the flock throughout the year and take the care of heat detection as well as natural breeding. Similar observations were reported

by Rai *et al.* (2004), Thiruvankadan *et al.* (2005) in Kanni Adu, Dixit *et al.* (2007) in Kutchi and Verma *et al.* (2007) in Jakhra goats. No selection was practiced (83.33%) for breeding males and females but certain existing conventional approaches were followed i.e. good physical appearance and size. However, 83.33% of farmers were culling their animals to dispose unproductive animals, animals with stunted growth and deformities etc. which is complementing the selection of goats as well.

About 98% of goat farmers did not adopt the castration of males which is a good management practice to get higher body weights during growth phase. The castration practice was reported by Thiruvankadam *et al.* (2005) in Kanni Adu goat.

The disposal of diseased or sick animals was done through sale (87.33%) and self consumption (5.33%). Though, majority of farmers consulted the doctor, the disposal of animals might be due to delay in attending treatment and chronic diseases.

It was found that 32.67% goat keepers were throwing dead animals in the open fields, on road sides and self consumption. Whereas 29.33% farmers buried, 6% farmers sold, and 20.67% farmers followed both selling and burying of the dead carcasses. A lesser proportion of farmers (2.67%) tied to the trees mainly due to the misbelief. These results indicate that majority of the farmers did not know the significance of proper disposal of dead animals and the mode of spread of infectious diseases from one outbreak to other places.

In the present study, 6 to 10% mortality/year was observed in 90 out of 150 farmer's flocks (60%), while 27.33% farmers reported 11 to 15% mortality and in 11.33% farmers up to 5% mortality was noticed. Acharya (1982) reported 15.2% mortality in Kutchi goats which is higher than the present finding.

The occurrence of diseases independently in a year revealed that foot-and-mouth disease (FMD), peste des petits ruminants (PPR), pox, enterotoxaemia (ET), mixed infections were reported by 32.67, 47.33, 9.33, 12.67, 4.67, 87.33, 78.67 and 3.33% farmers respectively. The study indicated that the prevalence of pneumonia condition and contagious ecthyma were very high in field conditions, and followed by PPR and FMD. Due to lack of housing facility, the animals were exposed to extreme weather conditions which resulted in pneumonia and ecthyma conditions.

Some of the findings in the present investigation on incidence of different diseases were close to the reports of Gokhale *et al.* (2002), Rai and Singh (2004), Thiruvankadan *et al.* (2005), Arun Kumar *et al.* (2006) and Dixit *et al.* (2007) in different Indian goat breeds under field conditions.

Farmers marketed goats based on live weight (2%), size or shape of the animal (26.67%), discretion of the butcher (2.67%) and both the size of the animal and discretion of the butcher (65.33%). It was found that the farmers disposed off animals to the only available market channel i.e. butcher after

prolonged bargaining. The farmers were at a disadvantage in this marketing procedure. Farmers disposed off their animals usually in their own villages (52.67%), in near by livestock shandy (23.33%) and 24% farmers sold their animals at both places.

About 71.33% of farmers marketed their animals at 4 to 6 months of age while 15.33% marketed before weaning (3 months) and 9.33% marketed between 7 and 10 months age. But a few farmers (4%) sold their animals at 11 to 13 months age. Majority of the farmers were following optimum age for marketing and also to get remunerative price as well as to produce qualitatively tender chevon. Similar result was reported in Kanni Adu goats (Thiruvankadan *et al.* 2005). Most of the farmers (89.33%) felt goat rearing was remunerative because of their ability to thrive on harsh conditions, disease resistance, high prolificacy etc. About 89.33% goat owners expressed that goats were more profitable than sheep (7.33%).

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