

Factors affecting sex ratio in mehsana goat at an organized farm of North gujarat

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ABSTRACT

Study on factors affecting sex ratio in Mehsana goat was carried out by retrieving data on birth of 375 kids for the period of 7 years from 2011 to 2017 were analyzed to study the factors affecting the sex ratio in Mehsana goats. The male to female sex ratio was 50.22:49.78 %. The percentage of males was higher in the months of June, April, September, February, March and May whereas it was higher in female in the months of July, November, December, October, January, February and March. The sex of kid was significantly affected by the season.

Key words: Mehsana goat, North Gujarat, Sex ratio

INTRODUCTION

The goat-a minicow, is multipurpose animal to provide milk, meat (chevon), hide, hair and manure for soil. In rural area goat farming plays a vital role to solve unemployment. The economic returns from keeping goats are high compared to other farming enterprises. Goat has been described as a poor man's cow because of their immense contribution to the poor people's economy. Mehsana goat is dual purpose breed and found in the Mehsana, Banaskantha, Patan, Gandhinagar and Ahmedabad district of Gujarat. Mehsana is a large size breed. The color of the coat is black with white spots at the base of the ear. The flock size of this goat breed vary from 15 – 300, even very smaller flocks of 2 – 5 goats are also found. Sex ratio in breeding population helps in maximizing genetic gain by enhancing the intensity of selection. It is generally established that the sex ratio do not deviate significantly from 50%. Still there are some factors, which might influence on the deviation of the sex ratio. The kidding percentage and twinning ability are the most important parameters to investigate reproductive efficiency. It is measure of production and profit point of view in organized and unorganized sector of goat farming.

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MATERIALS AND METHODS

Data on 375 births of Mehsana kids for the period of 7 years from 2011 to 2017 were analyzed for this study. All goats were maintained under same feeding and management practices followed by strict prophylactic measures. The year was divided into three seasons (summer = March to June; Monsoon= July to October; winter= November to February). Type of birth was classified as single and twins. The variation in the sex ratio due to year, season, month and type of birth were analyzed statistically (Snedecor and Cochran, 1967) by using appropriate statistical tools.

RESULTS AND DISCUSSION

Year-wise male and female births are presented in Table 1. The result revealed that the differences between the years were non-significant ($P>0.05$). Out of 375 total birth recorded, 183 (50.22%) and 192 (49.78%) were males and females respectively.

This was similar findings of nearly equal ratio of male:female by Deokar *et al.* (2000) (50.61:49.39%) in Osmanabadi goats, Barbind *et al.* (2004) in Beetal x Osmanabadi goats (49.16:50.48%), Soundararajan and Sivkumar (2006b) in Tellicherry goats

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Table 1 Year wise sex ratio in Mehsana goats

Sr. No.	Year	No. of does	Total birth	No. of male	%	No. of female	%
1	2011	83	96	42	43.75	54	56.25
2	2012	53	54	30	55.56	24	44.44
3	2013	40	42	21	50	21	50
4	2014	33	39	20	51.28	19	48.72
5	2015	26	30	18	60	12	40
6	2016	42	54	23	42.59	31	57.41
7	2017	42	60	29	48.33	31	51.67
	Total	319	375	183	50.22	192	49.78

Calculated chi-square value = 7.63^{NS}
Non significant at P>0.05; NS= non significant

Table 2 Season wise sex ratio of Mehsana goats

Sr. No.	Season	No. of does kidded	Birth	% of total birth	No. of male	%	No. of female	%
1	Winter	61	77	20.53	35	45.45	42	54.55
2	Summer	25	30	8.00	18	60.00	12	40.00
3	Monsoon	233	268	71.47	130	48.51	138	51.49
	Total	319	375		183		192	

Calculated chi-square value = 6.76^{*}; Significant at P<0.05

Table 3 Influence of type of birth on sex ratio in Mehsana goats

Sr. No.	Sex	Single	%	Twin	%	Total
1	Male	130	71.04	53	28.96	183
2	Female	133	69.27	59	30.73	192
	Total	263	70.16	112	29.84	375

Calculated chi-square value = 3.44^{NS}
Significant at P<0.05; NS= non significant

(51.81:48.19%) and Thiruvankadan *et al.* (2008) in Tellicherry goats (51.1:48.9%). On the contrary, some workers recorded unequal ratio of male female by Kale and Tomar (1997) reported (54.56:45.55%) in Alpine x Beetal goats, Soundrarajan and Sivakumar (2006a) in Kanni Goats (57.71:42.29%), Sivakumar and Soundrarajan (2007) in nondescript goats (55.43:44.57%) and Kharkar *et al.* (2017) in Osmanabadi goats (56.59:43.41%).

Kidding percentage is important parameter which reflects the reproductive efficiency and having low heritability (0 to 0.15). However management plays an important role in increasing reproductive efficiency. The higher kidding percentage indicated that the

Mehsana goat have potential to show better reproductive efficiency which could be optimized by providing excellent managerial practices.

Total 375 Mehsana kids were born during 2011 to 2017, out of that 71.47% (268) were born during monsoon followed by 20.53% (77) by winter and 8.00% (30) during summer season (Table 2). Influence of season was found to be significant. The kidding percentage of male was higher in the season of summer and in female was higher in the season of winter.

This is on the contrary with that of Deokar *et al.* (2002) they have observed more births (49.19) during winter months in Osmanabadi goats, Soundrarajan

Table 4 Month wise sex ratio in Mehsana Goats

Sr. No.	Year	No. of does kidded	Total Birth	No. of Male	%	No. of female	%
1	January	16	23	11	47.83	12	52.17
2	February	7	8	4	50.00	4	50.00
3	March	2	4	2	50.00	2	50.00
4	April	14	17	10	58.82	7	41.18
5	May	1	1	1	100.00	0	0
6	June	8	8	5	62.50	3	37.50
7	July	7	10	2	20.00	8	80.00
8	August	2	2	1	50.00	1	50.00
9	September	107	113	60	53.10	53	46.90
10	October	119	147	69	46.94	78	53.06
11	November	6	9	3	33.33	6	66.67
12	December	30	33	15	45.45	18	54.55
	Total	319	375	183		192	

Calculated chi-square value=13.72^{NS}

*Significant at P<0.05; NS= non significant

and Sivakumar (2006a) reported more births (40.97%) during winter season in Kanni goats and Kharkar *et al.* (2017) observed that more births (75.82%) during winter season in Osmanabadi goats. The percentage of male was higher in monsoon and winter seasons with a maximum of 60.00% during summer season.

The percentage of female was higher in twinning (30.73%) but the effect was not significant (Table 3).

The non significant effect on type of birth was also reported by Poonia *et al.* (2009) in Beetal goats. The percentage of single kidding (70.16%) was higher than twinning (29.84%) in Mehsana goat. The higher percentage of single kidding was also reported by Soundararajan and Sivakumar (2006a) in Kanni goats and Kharkar *et al.* (2017) in Osmanabadi goat. However, Sahare *et al.* (2009) reported 10.52% twinning in Osmanabadi goats.

The kidding percentage of male was higher in the month of April, June, September, February, March, May months 58.82 %, 62.50 %, 53.10 %, 50.00 %, 50.00 % and 100% (single record) respectively.

However kidding percentage in female was higher in July, November, December and October with 80.00 %, 66.67 %, 54.55 % and 53.06%, respectively (Table 4).

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