

Growth, Mortality and Production Performance of Mehsana Goat

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ABSTRACT

Data on 265 Mehsana kids born during 2006 to 2008 recorded for growth and production performance on 221 does maintained at sheep and goat research station of SD agricultural university was analyzed. The overall means \pm SE for body weight at birth, weaning and six months of age were 2.68 ± 0.03 , 9.33 ± 0.10 and 12.93 ± 0.19 kg., respectively, whereas, daily gain-I (birth to weaning) and daily gain -II (weaning to 6 months) were 73.22 ± 1.48 and 38.16 ± 1.64 gms., respectively. The type of birth revealed better growth in kids born as single up to weaning, however weight gain was more in twins during post weaning period. The overall mortality (birth to six months) was 23.02 %, whereas, pre-weaning (birth to three months) mortality was 12.83 %. Pre-weaning mortality was minimum in 2008 (6.32%), followed by 2007 (11.65%) and maximum in 2006 (27.88%). The overall kidding performance was 85.54 percent and twinning percentage was 25.84. The overall means \pm SE for total lactation milk yield, lactation length, service period, dry period, kidding interval, weight at first kidding, age at first kidding and gestation period were 76.35 ± 1.67 kg, 219.05 ± 4.86 days, 204.19 ± 3.58 days, 110.73 ± 8.29 days, 360.04 ± 5.63 days, 28.42 ± 0.39 kg, 701.16 ± 16.92 days and 147.25 ± 0.42 days, respectively.

Key Words: Mehsana goat, body weight, daily weight gain, mortality and production performance

INTRODUCTION

Mehsana is a dual-purpose goat breed of north Gujarat. Unlike other livestock species, there is scanty information available on growth and production performance of goat breeds in the state. The production performance traits are not only important for genetic improvement, but also critical for overall improvement of productivity and efficiency of farm operations. The present investigation was undertaken to study the growth, mortality, production and reproduction traits of Mehsana goats maintained at sheep-goat research station of Sardarkrushinagar agricultural university, Gujarat.

MATERIALS AND METHODS

Performance data on 325 Mehsana does maintained at Sheep and Goat Research Station (SGRS) of S. D. Agricultural University, Sardarkrushinagar, Gujarat during 2006-2009 was analyzed to study the performance of the breed. Growth and mortality data was recorded on 278 kids, while reproduction and production performance traits were recorded on 325 does. The data on body weights from birth to 6 months of age (kg.) and mortality rate (%) were classified according to year of birth, sex of kids and type of birth. Daily weight gain (gm) from birth to weaning (DG-I) and weaning to six months (DG-II) were computed. Similarly mortality rate was computed as percentage from birth to weaning and birth to six months of age. The production performance traits evaluated included kidding performance, total lactation milk yield (LMY), lactation length (LL), service period (SP), dry period (DP), kidding interval (KI), weight at first kidding (WFK), age at

first kidding (AFK) and gestation period (GP). The data was analyzed by statistical methods according to Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

The means with their standard errors for growth traits, mortality rate, performance traits and kidding performance are presented in tables 1-3.

Body weight: The overall average birth weight was 2.68 ± 0.03 kg. The birth weight was higher in males and kids born as single (Table 1). The findings are in conformity with those of Tomar et al. (1997 and 2004) for birth weight in Sirohi and Kutchi kids, however Singh (2003) reported higher birth weight in Marwadi kids (3.00 ± 0.21 kg). Body weight at weaning was higher in kids born during 2008 as compared to 2006 and 2007. The weight was almost similar in male and female, but kids born as single were heavier than twins even at weaning age (3-months). The weaning weight of Marwari kids is similar to that of Kutchi kids (Yadav et. al. 2003), but higher than Sirohi kids (Tomar et. al., 2004). The overall mean for body weight at six month was 12.93 ± 0.19 kg. The six months weight was higher in kids born during 2008. There was no difference due to sex and type of birth on body weight at six months of age. Tomar et. al. 2004) and Yadav et. al. (2003) reported higher six months body weights in Sirohi and Kutchi breeds, respectively as compared to that of Mehsana kids in the present study. The overall improvement in weaning and six months body weight was 38.42 and 25.61 percent, respectively over a period of three years (2006 to 2008).

Table 1: Mean \pm S. E. of body weight and daily weight gain in Mehsana kids.

Sr. No.	Variables	Growth Traits				
		BWT (kg)	WWT (kg)	SWT (kg)	DG-I (gm)	DG-II (gm)
1.	Year of Kidding:					
	2006	2.83 \pm 0.06 (67)	7.47 \pm 0.25 (51)	10.62 \pm 0.34 (46)	55.87 \pm 2.69 (51)	34.29 \pm 2.37 (46)
	2007	2.77 \pm 0.04 (103)	9.38 \pm 0.21 (91)	13.36 \pm 0.31 (82)	72.98 \pm 2.23 (91)	46.04 \pm 3.43 (74)
	2008	2.79 \pm 0.04 (95)	10.34 \pm 0.24 (89)	13.34 \pm 0.38 (78)	83.41 \pm 2.66 (89)	32.75 \pm 2.21 (76)
2.	Sex of Kids:					
	Male	2.87 \pm 0.04 (139)	9.29 \pm 0.20 (120)	13.30 \pm 0.29 (106)	71.26 \pm 2.11 (120)	42.01 \pm 2.65 (102)
	Female	2.52 \pm 0.04 (126)	9.37 \pm 0.19 (111)	12.53 \pm 0.25 (98)	75.34 \pm 2.14 (111)	34.03 \pm 1.93 (95)
3.	Type of Birth:					
	Single	2.80 \pm 0.03 (179)	9.67 \pm 0.16 (164)	12.92 \pm 0.23 (145)	75.90 \pm 1.81 (164)	35.99 \pm 1.90 (139)
	Twins	2.43 \pm 0.04 (86)	8.49 \pm 0.24 (67)	12.34 \pm 0.32 (61)	66.67 \pm 2.49 (67)	43.32 \pm 3.22 (57)
4.	Overall	2.68 \pm 0.03 (265)	9.33 \pm 0.10 (231)	12.93 \pm 0.19 (204)	73.22 \pm 1.48 (231)	38.16 \pm 1.64 (197)

Table 2: Mortality Rate of Mehsana Kids.

Sr. No.	Variables	Mortality Rate (%)	
		Birth to weaning	Birth to Six months
1.	Year of kidding		
	2006	27.88	31.34
	2007	11.65	20.39
	2008	06.32	17.89
2.	Sex of kids:		
	Male	13.67	23.74
	Female	11.90	22.22
3.	Type of birth:		
	Single	08.38	18.99
	Twins	22.09	29.07
4.	Overall	12.83	23.02

Daily Weight Gain: The average daily weight gains I and II were 73.22 \pm 1.48 and 38.16 \pm 1.64 gm, respectively. Tomar et al. (2004) reported comparatively higher estimates for DG-I (87.52 \pm 3.16 gm.) and DG-II (51.35 \pm 3.01 gm.) in Sirohi kids. Average DG-I was higher in kids born in 2008 (83.41 \pm 2.66 gm). The type of birth revealed better growth in kids born as single up to weaning but in twins weight gain was higher during post weaning period. Better growth was observed in females up to weaning, whereas, male kids had better growth during post weaning period (Table 1).

Mortality Rate: In goat production, mortality in kids and

kidding performance are important characteristics associated with profitability and adaptability. The overall mortality (birth to six months) was 23.02 percent, whereas pre-weaning (birth to three months) mortality was 12.83 percent. According to the year of birth, pre-weaning mortality was minimum in 2008 (6.32%), followed by 2007 (11.65%) and 2006 (27.88%). The corresponding values for overall mortality (birth to six months) were 17.89, 20.39 and 31.34 percent, respectively. The mortality trend was almost similar between male and female kids. The least pre-weaning mortality of 8.38 percent was recorded in kids born as

single (Table 2). Singh et al. (1992) studied the mortality and survival pattern in six breeds of goat in two different agro-climatic zones and reported similar overall mortality (18.79 percent) in the flocks of semi-arid zone. However, Kanaujia et al. (1985) reported higher mortality rate in Black Bengal kids as compared to present study. This may be attributed to poor mothering ability, low milk yield and higher litter size in Black Bengal does resulting in higher pre-weaning mortality. The results revealed the improvement in pre-weaning and overall mortality in kids over the years.

Kidding Performance: The overall kidding performance was 85.54 percent, which ranged from 83.32 to 88.03 percent. The overall twinning percentage was 25.84%. Similar kidding performance was reported by Arun et. al. (2002) in Kutchi goat (83.70 %), but lower kidding percentage was reported by Mishra et. al. (1983) in Sirohi goat.

Table 3: Kidding rate in Mehsana goat.

Sr. No.	Variables	Kidding Performance			
		2006	2007	2008	Overall
1.	Sex:				
	Male	40 (41.66)	53 (45.30)	51 (45.13)	144 (44.31)
	Female	40 (41.66)	50 (42.73)	44 (38.94)	134 (41.23)
2.	Type of Birth:				
	Single	58 (60.40)	59 (50.43)	77 (68.14)	144 (44.31)
	Twins	22 (22.92)	44 (37.60)	18 (15.93)	134 (41.23)
3.	Overall	80 (83.32)	103 (88.03)	95 (84.07)	278 (85.54)

Production Performance Traits: The overall mean for total lactation milk yield was 76.35 ± 1.67 kg. Similar lactation milk yield has been recorded in Sirohi goats (72.20 kg.), (Mishra et al., 1983) and higher lactation milk yield in Kutchi goat (112.56 ± 5.65 kg.) (Arun et al., 2004). The mean lactation length in Mehsana goat was 219.05 ± 4.86 days. Similar lactation length was recorded by Arun et al. (2004) in Kutchi goat. The mean interval between kidding to next conception (service period) averaged 204.19 ± 3.58 days indicating that majority of goats conceived within seven months after kidding. Mishra (1985) reported shorter service period in Beetal goats (178 ± 5.7 days). The overall mean dry period was 110.73 ± 8.29 days and the kidding interval (KI) was 360.04 ± 5.63 days. Lower estimates for kidding interval were reported in Malabari (307 to 332 days) (Mukundan 1979) and Beetal goat (304 ± 4.1 days) (Mishra (1985). However, longer kidding interval has been observed in Kutchi goats (411.17 ± 50.95 days) (Arun et al., 2006) as compared to present findings in Mehsana goat.

The weight and age at first kidding depends on the onset of puberty and indicates the reproductive potential of does. The overall means for weight and age at first kidding, in present study, were 28.42 ± 0.39 kg and 701.16 ± 16.92 days, respectively. Mishra et al., (1983) reported similar weight at first kidding in

Sirohi goat. Mukundan (1979) reported that the age at first kidding in Malabari goat varied from 455 to 612 days, while Arun et al., (2006) reported the age at first kidding of 698.41 ± 1.49 days in Kutchi goats. The overall mean gestation period was 147.25 ± 0.42 days in present study. Similar results were reported by Arun et al., (2004) and Mishra et al., (1979) in Kutchi and Sirohi goat breeds, respectively.

The study thus reports the growth, mortality, reproductive and lactation performance traits of Mehsana goats maintained at organized farm.

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