Asian J. Dairy Res., 3 (1) : 55–59, 1984.

PERFORMANCE OF BEETAL, ALPINE AND SAANAN GOATS UNDER STALL-FED CONDITIONS

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ABSTRACT

Overall average milk yield of Beetal, Alpine and Saanan was 178.9± 4.0, 249.9±6.9 and 220.9±13.4 kg for those which actually yielded milk for 150 days while total actual milk yield was 156.9±6.8, 308.4±16.7 and 286.4± 20.4 kg in an average lactation of 186, 244 and 243 days respectively. Average first 150 days milk yield of Beetal and Alpine increased significantly from first to fourth lactation while in Saanan, it was from first to second. The milk production of imported Alpine and Saanan goatlings did not vary significantly from their respective farm born Alpine and Saanan breeds did not vary significantly for 150 days, total yield, lactation length and kidding interval. Kidding interval between these three breeds did not differ significantly indicating that Beetal does had longer dry period.

Breeding goats for milk production compared to cattle and buffaloes has received little attention. There are, however, very few established breeding programmes for goats in this country. Production potential of Alpine and Saanan is rarely known under Indian conditions. This study was undertaken to compare the performance of native Beetal and exotic Alpine and Saanan goats under stall fed conditions.

Milk production data of 91 Beetal, 56 Alpine and 18 Saanan does during 1971–82 constituted the material for this study. Goats were milked twice a day and milk yield at each milking was recorded. Kids were weaned at birth. Beetal, Alpine and Saanan goats were compared on the basis of 150-day yield, lactation milk yield, lactation length and kidding interval Does who had produced milk at least for 150 days during first, second, third and fourth lactation of these three breeds were considered. Milk production of Alpine and the Saanan goatlings imported and the farm born were also compared. Total milk yield, lactation period and kidding interval of first four lactations were also recorded ignoring lactation length and the yield of goats producing milk for less than 50 days.

Table 1 presents the average first 150-day milk yield in Beetal goats which increased from 144.2±6.0 kg in Ist lactation to 217.0±9.7 kg in 4th lactation. Similarly in Alpine does, it increased from 208.8±8.8 kg to 303.7±24.8 kg. These differences were significant. Parity had a significant effect on milk production in all the three breeds. Average first 150-day milk yield of pooled over lactations of the Alpine and the Saanan was 39.7 and 23.5% higher ($P<0.1$) than

Beetal does. The superiority ($P<.05$) of Alpine over Beetal was 40.0% (4th lactation) to 47.3% (2nd lactation) and of Saanan it was 24.9% (3rd lactation) to 52.4% (2nd lactation). Results revealed that Alpine and Saanan does were significantly high milk producers than Beetal does. Infusion of Alpine and the Saanan genes in Beetal breed, therefore, shall be advantageous for increasing the milk production.

Table 1. First 150-day milk yield of Beetal, Alpine and Saanan

Order of lactation	Breed					
	Beetal		Alpine		Saanan	
	Mean±SE	C.V.	Mean±SE	C.V.	Mean±SE	C.V.
1	144.2±6.0 (53)	30.2	208.8±8.8 (56)	31.6	189.3±17.3 (18)	38.7
2	172.6±6.6 (57)	28.8	254.2±11.4 (53)	32.6	263.0±25.4 (13)	34.8
3	194.8±7.5 (54)	28.1	277.4±15.8 (36)	32.9	243.2±35.1 (6)	35.3
4	217.0±9.7 (35)	26.3	303.7±24.8 (20)	36.5	206.6±38.8 (8)	53.1
Pooled	178.9±4.0 (199)	31.7	249.9±6.9 (165)	35.7	220.9±13.4 (45)	40.9
Sources of variation	df	MSS	df	MSS	df	MSS
Between lact.	3	43487**	3	60255**	3	21832*
Within lact.	195	2598	161	6977	41	7145

Figures in parentheses are the number of animals averaged.
*Significant at 5% level **Significant at 1% level

Table 2. First 150-day milk yield of the imported and the farm-born goatlings

Order of lactation	Alpine		Saanan	
	Taxas' born Mean±SE	Farn born Mean±SE	Taxas' born Mean±SE	Farm born Mean±SE
1	240.9±20.8 (11)*28.7*	200.9±9.5 (45)*31.6*	230.5±35.0 (6)*37.2*	168.1±16.9 (12)*34.8*
2	293.4±32.4 (9)*33.1*	231.7±14.7 (32)*35.9*	280.5±36.8 (6)*32.2*	248.0±36.7 (7)*39.1*
3	274.1±31.3 (8)*32.3*	278.4±17.7 (28)*33.6*	268.6±29.6 (5)*24.6*	—
4	226.0±32.0 (3)*24.6*	315.8±26.0 (18)*35.0*	252 0±50.7 (5)*45.0*	—

Figures in parentheses are the number of animals averaged and italic letters values are % coefficient of variation.

Table 3. Milk yield, lactation length and kidding interval of Beetal, Alpine and Saanan breeds

Order of lactation	Actual milk yield (kg)			Total lactation length (days)			Kidding interval (days)		
	Beetal	Alpine	Saanan	Beetal	Alpine	Saanan	Beetal	Alpine	Saanan
1st lactation	148.5±8.2	299.2±29.3	268.9±25.2	195.5±7.5	253.7±18.1	258.7±14.2	339.2±14.6	357.4±12.4	337.8±9.2
	(91)*52.9*	(54)*71.9*	(17)*38.6*	(91)*36.2*	(54)*52.5*	(17)*22.7*	(70)*35.9*	(49)*24.4*	(14)*10.1*
2nd lactation	162.6±14.2	322.8±26.5	320.7±42.7	174.7±10.5	260.0±11.8	235.0±22.8	323.2±21.7	350.0±10.5	333.8±20.4
	(49)*61.2*	(38)*50.6*	(14)*49.8*	(49)*42.01*	(38)*27.9*	(14)*36.4*	(26)*34.2*	(30)*16.4*	(10)*19.3*
3rd lactation	163.9±23.2	332.7±45.9	243.3±58.4	165.9±17.7	234.0±22.7	208.7±32.3	292.9±20.9	336.4±20.6	339.4±29.5
	(22)*66.4*	(26)*70.4*	(10)*75.9*	(22)*50.1*	(26)*49.5*	(10)*48.9*	(13)*25.5*	(13)*22.0*	(7)*23.0*
4th lactation	183.7±36.0	258.2±61.5	333.0±63.0	184.9±32.0	206.4±33.5	266.8±23.3	292.5±32.2	366.9±34.9	339.3±7.5
	(9)*58.7*	(12)*82.5*	(5)*42.3*	(9)*51.9*	(12)*56.2*	(5)*19.5*	(8)*31.10*	(7)*25.1*	(3)*3.8*
Overall including other lactations	156.9±6.8	308.4±16.7	286.4±20.4	186.3±5.7	244.9±9.2	243.1±10.8	328.1±10.4	354.4±7.4	338.8±8.7
	(173)*57.4*	(142)*64.5*	(50)*50.3*	(173)*40.3*	(142)*44.8*	(50)*31.4*	(118)*34.4*	(107)*21.7*	(36)*15.3*

Figures in parentheses are the number of animals averaged and italic letter values are % coefficient of variations.

The averages for 150-day milk yield of Alpine and Saanan does born in Texas, USA and farm born does are given in Table 2. First and second lactation yield of Alpine and Saanan goats that were born in Texas did not differ significantly than those born at this farm, though slightly higher. Farm born Saanan does were the progeny of Saanan bucks imported from Switzerland. Since number of observations in 3rd and 4th lactation were small it is hard to comment on the superiority or inferiority of bucks.

The average milk yield of both exotic breeds, imported from Texas (USA), farm born or pooled over did not exceed 300 kg milk in 150 days lactation length under present system of management. Analysis further showed that 14.6, 25.0, 36.1 and 40.0% Alpine does produced more than 300 kg milk in Ist, 2nd, 3rd and 4th lactation respectively, while 5.5, 46.1, 16.6 and 12.5% were in Saanan. The present available exotic genes in Alpine and Saanan bucks for either crossing Beetal goats or forward crossing appear to hardly meet the objectives which aim to evolve a strain of crossbred capable to produce 300 kg milk in 150 days (Chawla and Bhatnagar, 1984). It is, therefore, suggested to import Alpine/Saanan superior germ plasm capable to produce at least 400-500 kg milk in 150 days under tropical conditions.

Milk yield of Beetal increased with the increase in the order of lactations. Effect of order of lactation on total milk yield was not significant ($P>.05$) in any of the breeds. Influence of breed on these four lactations yield was significant ($P<.01$). Exotic breeds produced two times more milk compared to Beetal under the same managemental practices (Table 3). The coefficient of variation for milk production varied from 52.9 to 66 4% in Beetal, 50.6 to 82.5% in Alpine and 38.6 to 75.9% in Saanan. Average milk yield of Alpine does was 308.4 ± 16.7 kg which was similar to the reported value (310 kg) of Gill and Dev (1972) in Alpine does at PAU, Ludhiana. Milk yield of Alpine and Saanan was more than 430 kg in temperate countries (Gall, 1981). Very extreme cases of high milk production of individual were observed in this study. Three Alpine does produced 931, 1052 and 1047 kg milk in first lactation during 958, 599 and 598 days respectively. The first 150 days milk yield of these does ware 198, 233 and 332 kg. The highest milk yield per day of individual Beetal, Alpine and Saanan does recorded at this farm was 5.4, 6.0 and 4.6 kg respectively.

Beetal goats produced less milk yield over shorter lactation duration compared to Alpine and Saanan having longer lactation period under similar management which is in confirmity with Sands and McDowell (1978). The milk production of Alpine and the Saanan tended to decrease but remained higher than for the Beetal. Alpine and Saanan breeds originated from temperate region put in tropical and sub-tropical area, their milk yield decreased by 33% on an average.

Averages for pooled lactation length of Beetal, Alpine and Saanan were 186±6, 245±9 and 243±11 days respectively. Beetal had significantly shorter ($P<.05$) lactation length than the exotic breeds. Alpine and Saanan does on an average had 28.9 and 31.5% higher ($P<.05$) first lactation length over Beetal. Average lactation length in the exotic breeds was lower than those reported by Sanfiorenzo (1962) in Alpine and Hofmeyer (1972) in Alpine and Saanan. Gall (1981) reported lactation period of Alpine and Saanan in temperate zones varying from 260 to 365 days. Exotic breed originated from temperate zone when reared in tropical and subtropical areas had their production period less by about 9%, probably due to the local environmental stress.

Average for pooled kidding interval for Beetal, Alpine and Saanan were 328±10, 354±7 and 339±9 days respectively. There was a decrease in kidding interval from Ist to 3rd in Beetal and Alpine and Ist to 2nd in Saanan.

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