

STUDIES ON BODY WEIGHTS OF ASSAM LOCAL AND ASSAM LOCAL CROSSBRED GOATS

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ABSTRACT

Data on body weights at birth, 1 and 3 months of age each of 246 kids, 6 months of age of 212 and 12 months of age of 152 kids belonging to three genetic groups, maintained at 3 different farms of Assam Agricultural University, covering a period of 10 years (1990-1999) were utilized. The least-squares means (μ) of body weights at birth, 1, 3, 6 and 12 months of age were 1.44 ± 0.02 , 3.14 ± 0.06 , 5.84 ± 0.10 , 9.00 ± 0.15 and 13.85 ± 0.23 kg respectively. Genetic group, sex, season and type of birth exerted significant effect on body weights at all the ages, excepting the effect of season on 1 month body weight, kidding order at all the ages and type of birth on birth and 12 months body weight which were found to be non-significant. The results showed an increasing trend of the weight of the kids with the increase in Beetal inheritance. Males were significantly heavier than the females. Singlets were found to be heavier to multiples.

Key words : Body weights, goats,

Body weight is an important character in meat-type goats, and is affected by various genetic and non-genetic factors (Singh, 1997; Roy *et al.*, 1997). This study aims to evaluate the effect of some genetic and non-genetic factors as a source of variation of body weights at various ages in Assam Local goats and their crosses with Beetal.

Data on body weights at different ages *viz.* birth, 1, 3, 6 and 12 months of animals

belonging to three genetic groups, *viz.* Assam Local (AL), $\frac{1}{2}$ Beetal $\frac{1}{2}$ Assam Local ($\frac{1}{2}$ B $\frac{1}{2}$ AL) and $\frac{3}{4}$ Beetal $\frac{1}{4}$ Assam Local ($\frac{3}{4}$ B $\frac{1}{4}$ AL) maintained at the Experimental Livestock Farm, Department of Physiology, Goat Research Station, Burnihat and the Livestock Research Station, Mandira, Assam Agricultural University, covering a period of 10 years (1990-1999) were utilized. The animals were kept under uniform feeding and management. Each year was divided into four seasons based on

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climatic reports, viz. Summer monsoon (March to May), South West monsoon (June to September), Post monsoon (October to November) and Winter (December to February). Sex of the kids was indicated as male and female, while the type of birth was classified as single and multiple birth. Kidding order comprised of 4 groups, viz. first, second, third and above third. The data were analysed by least-squares technique of fitting constants (Harvey, 1975). Whenever the effect was found significant, Duncan's multiple range test (DMRT) as modified by Kramer (1957) was applied for pair wise comparison among the means.

The least-squares means along with their standard errors for body weights at birth, 1, 3, 6 and 12 months of age are presented in Table 1. The least-squares means (μ) of body weights at birth, 1, 3, 6 and 12 months of age were found to be 1.44 ± 0.02 , 3.14 ± 0.06 , 5.84 ± 0.10 , 8.99 ± 0.15 and 13.85 ± 0.23 kg respectively.

Effect of genetic group

The least-squares analysis of variance revealed highly significant ($P < 0.01$) effect of genetic group on body weights at all the ages. $\frac{3}{4}$ B $\frac{1}{4}$ AL kids were significantly heavier than the other two groups. It was observed that the weight of the kids increased along with the increase in Beetal inheritance. This was also corroborated by Singh (1997) in Black Bengal and their halfbreds with Jamunapari and Beetal goats.

Effect of sex

The differences associated with sex were found to be highly significant ($P < 0.01$) for body weights at all the ages. The male kids were significantly heavier than the female kids. Significant effects of sex on body weights of kids were also reported by Singh (1997), Thiruvankadan *et al.* (2009) and Sundaram *et al.* (2012).

Effect of kidding order

The kidding order had no significant effect on body weights at all the ages. This found support from Nagpal and Chawla (1985).

Effect of season

The seasonal differences for body weights at all the ages excepting at 1 month were also highly significant ($P < 0.01$). Similar findings were also reported by Mehta *et al.* (1997) and Roy *et al.* (1997). The variation in body weights due to season is a reflection of availability of pasture to the pregnant and lactating dams as well as to their kids.

Effect of type of birth

The type of birth had significant ($P < 0.05$) effect on body weights at 1, 3 and 6 months of age. Singlets were found to be heavier to multiples. Similar observations were also reported by Roy *et al.* (1997), Thiruvankadan *et al.* (2009) and Sundaram *et al.* (2012).

Table 1: Least-squares means along with standard errors for body weight at different ages

Factors	Body Weight (kg)				
	Birth	1 month	3 months	6 months	12 months
μ	1.44±0.02 (246)	3.14±0.06 (246)	5.84±0.10 (246)	8.99±0.15 (212)	13.85±0.23 (152)
Genetic group:	**	**	**	**	**
AL	1.08±0.04 ^a (90)	2.58±0.05 ^a (90)	4.95±0.17 ^a (90)	7.48±0.26 ^a (75)	11.98±0.39 ^a (61)
½ B ½ AL	1.46±0.04 ^b (80)	3.07±0.10 ^b (80)	5.76±0.17 ^b (80)	9.23±0.26 ^b (67)	13.72±0.41 ^b (44)
¾ B ¼ AL	1.77±0.04 ^c (76)	3.79±0.10 ^c (76)	6.80±0.18 ^c (76)	10.27±0.27 ^c (70)	15.86±0.43 ^c (47)
Sex:	**	**	**	**	**
Male	1.55±0.03 ^a (114)	3.34±0.08 ^a (114)	6.19±0.14 ^a (114)	9.42±0.21 ^a (100)	14.68±0.35 ^a (69)
Female	1.32±0.03 ^b (132)	2.95±0.07 ^b (132)	5.48±0.13 ^b (132)	8.55±0.20 ^b (112)	13.02±0.30 ^b (83)
Kidding order:	NS	NS	NS	NS	NS
First	1.41±0.04 (70)	3.06±0.10 (70)	5.67±0.17 (70)	8.76±0.26 (62)	13.27±0.42 (43)
Second	1.42±0.05 (60)	3.12±0.11 (60)	5.95±0.18 (60)	8.93±0.29 (51)	13.84±0.43 (40)
Third	1.44±0.06 (39)	3.15±0.14 (39)	5.73±0.24 (39)	9.03±0.36 (35)	13.74±0.57 (24)
Above third	1.47±0.04 (77)	3.25±0.10 (77)	6.00±0.17 (77)	9.25±0.26 (64)	14.57±0.41 (45)
Season:	**	NS	**	**	**
Summer monsoon	1.33±0.06 ^a (50)	3.07±0.12 ^a (50)	5.60±0.14 ^a (50)	8.13±0.24 ^a (47)	11.95±0.40 ^a (35)
South West monsoon	1.50±0.04 ^b (38)	3.09±0.13 ^b (38)	5.80±0.20 ^b (38)	9.41±0.30 ^b (38)	14.56±0.47 ^b (36)
Post monsoon	1.50±0.05 ^b (48)	3.32±0.12 ^b (48)	6.30±0.21 ^b (48)	9.46±0.30 ^b (48)	14.87±0.50 ^b (31)
Winter	1.42±0.05 ^{ab} (110)	3.09±0.08 ^{ab} (110)	5.65±0.23 ^{ab} (110)	8.96±0.33 ^{ab} (79)	14.03±0.46 ^{ab} (50)
Type of birth:	NS	*	*	*	NS
Single	1.42±0.03 (135)	3.26±0.08 ^a (135)	6.15±0.13 ^a (135)	9.45±0.20 ^a (116)	13.93±0.32 (78)
Multiple	1.40±0.04 (111)	3.03±0.09 ^b (111)	5.52±0.15 ^b (111)	8.54±0.23 ^b (96)	13.78±0.34 (74)

- * - Significant
 * * - Highly significant
 NS - Non-significant

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