Research Journal of Animal Sciences 5 (3): 40-42, 2011
ISSN: 1993-5269

Carcass Characteristics of Attappady Black Goats Raised Under Extensive Grazing System

[1]T.V. Raja, [2]M. Stephen, [1]K.A. Bindu and [1]T. Marykutty
[1]Department of Animal Breeding and Genetics,
College of Veterinary and Animal Sciences, Pookode-673576, Wayanad District, Kerala, India
[2]Centre for Advanced Studies in Animal Genetics and Breeding, COVAS, Mannuthy, India

Abstract: The carcass characteristics of Attappady black goats reared under the high range field conditions of Kerala in India were studied. A total of 30 animals randomly purchased from various places of the home tract of the breed were slaughtered at the Meat Technology Unit of the College of Veterinary and Animal Sciences, Thrissur for evaluation study of the carcass. Out of 30 animals 10 each (5 males and 5 females) belonged to 6, 9 and 12 months of age. The live weight was recorded at the time of purchase as well as just before slaughter to find out the transport/fasting loss. The weight of carcass and non-carcass components of each animal was recorded to study the dressing percentage. At the time of purchase, average live weights of males belonging to 6, 9 and 12 months of age were 14.6, 18.0 and 20.8 kg, respectively and the corresponding values were 13.6, 16.0 and 20.6 in females. The transport loss was the lowest for animals at 12 months of age (8.65% for males and 9.22% for females) and highest for animals at 6 months of age (10.96% for males and 10.29% for females). The dressing percentage was maximum at 6 months of age (43% for males and 42.96% for females) followed by animals at 12 months of age (42.83% for males and 41.425 for females). The percentages of non-carcass components like blood, hide, head and cannons, lungs, organs and stomach and intestine were also individually recorded. The study revealed that dressing percentage was the highest in goats of 6 month age groups even though the transport loss was more compared to other groups and hence it is recommended that the Attappady black goats can be slaughtered at the age of 6 months for better economic returns.

Key words: Attappady black goats, carcass characters, extensive system of rearing, slaughter studies

INTRODUCTION

Attappady black goat is one of the two native goat breeds of Kerala known for meat production. The native tract of the breed is the Attappady region in the Western ghats of Kerala. The breed is mainly reared for meat production by the tribal communities namely Irulas, Mudugas and Kurumbas. The morphological characteristics of the breed are seen in Stephen *et al.* (2005). The goats are mainly raised under extensive system of rearing with zero input system. Community grazing is generally followed where the goats will be taken out for grazing early in the morning to the nearby forest and return by the evening.

Water will be provided twice a day, morning and evening from the rivers on the way while going and coming back. The goats are poor milk producers, averaging about 200 g day^{-1} but are very good convertors of the low quality feed into meat. Even though the goats are solely reared for meat, so far no research has been reported on their carcass characteristics and the present investigation is a pilot study in this regard.

MATERIALS AND METHODS

A total of 30 animals randomly selected from the filed units were purchased from the home tract of the breed. Out of 30 animals 10 each (5 males and 5 females) belonged to 6, 9 and 12 months of age. The goats were transported from Attappady to the Meat Technology Unit of the College of Veterinary and Animal Sciences, Thrissur for evaluation study of the slaughter traits. The live weight was recorded at the time of purchase early in the morning before feeding as well as just before slaughter to find out the transport/fasting loss. The weight of carcass and non-carcass components of each animal was recorded to study the dressing percentage. The data on various carcass traits was subjected to least

Corresponding Author: T.V. Raja, Department of Animal Breeding and Genetics, College of Veterinary and Animal Sciences, Pookode-673576, Wayanad District, Kerala, India

squares analysis of variance as described by Harvey (1990) to find out the effect of non-genetic factors viz., age and sex as per the equation given:

$$Y_{ijk} = \mu + A_i + S_j + e_{ijk}$$

Where:

Y_{ijk} = Dependent trait of kth goat belonging to ith age and jth sex
μ = Overall mean
A_i = Effect of ith age
S_j = Effect of jth sex

RESULTS AND DISCUSSION

The average live weights of male goats belonging to 6, 9 and 12 months of age at the time of purchase were 14.6, 18.0 and 20.8 kg, respectively and the corresponding values were 13.6, 16.0 and 20.6 in females (Table 1). Statistical analysis revealed significant effect of age on the live weight at purchase and slaughter while it was non-significant for sex. The transport loss was the lowest for animals at 12 months of age (8.65% for males and 9.22% for females) and highest for animals at 6 months of age (10.96% for males and 10.29% for females). The loss for animals belonging to 9 months of age was 10.00% for both the sexes. Similar to the present findings Kannan *et al.* (2000) also reported a shrinkage loss of around 10% in Spanish goats. The dressing percentage was maximum at 6 months of age (43% for males and 42.96% for females) followed by animals at 12 months of age (42.83% for males and 41.425% for females). The difference between sexes with regard to the carcass weight was not significant but was highly significant ($p<0.01$) for age (Table 2). The dressing percentages obtained in the present study were slightly lower than the other Indian goat breeds as reported by Devendra (1991) while slightly higher than the values reported by Amin *et al.* (2000) in Black Bengal and its crosses with Jamunapari. As reported by Sanudo *et al.* (1998), the variation in the dressing percentage noticed in the present study might be due to various factors like diet, production system, age, sex, breed and fasting period prior to slaughter.

The percentages of non-carcass components like blood, hide, head and cannons, lungs, stomach and intestine and other organs which comprised of liver, spleen, heart, kidney etc. were minimum for animals of 6 months of age while maximum for 9 months of age and in general the differences were highly significant ($p<0.01$).

Priolo *et al.* (2002) and Caneque *et al.* (1990) opined that the digestive tract of extensively produced animals are more developed due to the higher intake of dry matter compared to intensively produced animals of the same age. A more developed digestive tract will be larger and heavier which will decrease the dressing percentage of the

Table 1: Carcass characteristics of attappady black goats

	Male (months)			Female (months)		
Details	6	9	12	6	9	12
No. of animals	5.00	5.00	5.00	5.00	5.00	5.00
Live weight (kg)	14.60±0.68	18.00±0.32	20.80±1.46	13.60±0.51	16.00±0.44	20.60±1.60
Slaughter weight (kg)	13.00±0.40	16.20±0.51	19.00±1.14	12.20±0.37	14.40±0.37	18.70±1.45
Transport, fasting loss (%)	10.96	10.00	8.65	10.29	10.00	9.22
Carcass weight (kg)	5.60±0.270	6.75±0.290	8.16±0.620	5.25±0.340	5.95±0.320	7.75±0.610
Dressing percentage (%)	43.00±1.03	41.70±1.46	42.83±0.97	42.96±1.91	41.23±1.36	41.42±0.32
Non carcass component (%)						
Blood (%)	5.85±0.240	4.54±0.500	4.41±0.270	6.27±0.200	5.40±0.300	5.66±0.330
Hide (%)	10.08±0.64	9.54±0.510	10.57±0.65	10.13±0.40	9.12±0.210	11.70±0.34
Head and cannons (%)	11.99±0.79	10.82±0.26	10.94±0.30	11.46±0.40	12.58±0.57	11.29±0.26
Lungs (%)	1.66±0.460	1.61±0.070	1.69±0.070	1.97±0.130	1.61±0.210	2.130±0.22
Organs (%)	3.84±0.180	5.61±0.930	3.79±0.110	4.54±0.410	3.700±0.36	3.660±0.12
Stomach and intestine (%)	23.58±0.93	26.18±1.40	25.77±0.68	22.67±1.64	26.36±1.10	24.14±0.58

Non-carcass components are given as % of slaughter weight; values in the table are the actual averages and not the LS means

Table 2: Least squares analysis of variance (mean sum of squares only) on different carcass traits

Factors	Age	Sex	Errors	R^2-value
Live weight at purchase (kg)	103.4330**	8.533^{NS}	4.556000	65.70
Slaughter weight at (kg)	98.2580**	7.008^{NS}	3.255000	70.60
Carcass weight (kg)	16.3880**	2.028^{NS}	0.883000	60.30
Blood	0.1060**	0.052^{NS}	0.014000	41.70
Hide	1.9180**	0.010^{NS}	0.068000	68.60
Head and cannons	0.4680**	0.005^{NS}	0.028000	56.30
Lungs	0.0530**	0.005^{NS}	0.007000	38.80
Organs	0.0004^{NS}	0.000007^{NS}	0.000198	13.50
Stomach and intestine	8.3320**	1.07^{NS}	0.389000	63.70

Analysis for non-carcass components was performed using the actual values and not percentages, **Significant at 1% level ($p<0.01$), NS = Non Significant

animal, producing a lighter carcass. Well developed digestive system, contributes to an overall lower dressing percentage, compared to animals from an intensive production system. The lower dressing percentage with higher non-carcass component noticed in the study also supports the above findings.

CONCLUSION

The results of the present study revealed that as the slaughter weight increased as the age advanced and the transport loss was lowest at 12 months of age while highest at 6 months. However, the dressing percentage was found to be highest in goats of 6 months of age followed by 12 and 9 months. The extensive system of rearing attappady black goats might have resulted in lower dressing percentage and higher non-carcass components when compared other Indian goats reared under intensive system. Based on the results it was concluded that the Attappady black goats raised for meat production can be sold at the age of 6 months for better economic returns.

REFERENCES

Amin, M.R., S.S. Husain and A.B.M.M. Islam, 2000. Evaluation of black Bengal goats and their cross with the Jamunapari breed for carcass characteristics. Small Rumin. Res., 38: 211-215.

Caneque, V., F. Huidobro, J.A. Hemandez and J.F. Dolz, 1990. Comparison between four fattening systems for lambs and their effect on carcass quality. Proceedings of the 41st Annual Meeting of the European Association of Animal Production, July 9-12, 1990, Toulouse, France, pp: 180-181.

Devendra, C., 1991. Goat meat production potential in the developing countries. Proceedings of the 7th Annual Mexican Meeting on Goat Production, October 23-25, 1991, Monterrey, Mexico.

Harvey, W.R., 1990. User's guide for LSMLMW (PC Version 2.) mixed model least squares and maximum likelihood computer program. The Ohio State University, Columbus, OH., USA.

Kannan, G., T.H. Terrill, B. Kouakou, O.S. Gazal, S. Gelaye, E.A. Amoah and S. Samake, 2000. Transportation of goats: Effects on physiological stress responses and live weight loss. J. Anim. Sci., 78: 1450-1457.

Priolo, A., D. Micola, J. Agabriela, S. Prachea and E. Dransfield, 2002. Effect of grass or concentrate feeding systems on lamb carcass and meat quality. Meat Sci., 62: 179-185.

Sanudo, C., A. Sanchez and M. Alfonso, 1998. Small ruminant production systems and factors affecting lamb meat quality. Meat Sci., 49: 28S-64S.

Stephen, M., T.V. Raja and I. Sosamma, 2005. Survey and characterization of Attappady black goats of Kerala, India. Anim. Genet. Resour. Inform., 37: 43-52.