



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(7): 116-118
© 2023 TPI
www.thepharmajournal.com
Received: 07-04-2023
Accepted: 16-06-2023

K Chinnamani
Associate Professor, Department
of Livestock Production
Management, Veterinary College
and Research Institute, Theni,
Tamil Nadu, India

J Muralidharan
Professor and Head, Mecheri
Sheep Research Station,
Pottaneri, Tamil Nadu, India

AK Thiruvankadan
Professor and Head, Department
of Animal Genetics and
Breeding, Veterinary College and
Research Institute, Namakkal,
Tamil Nadu, India

Corresponding Author:
K Chinnamani
Associate Professor, Department
of Livestock Production
Management, Veterinary College
and Research Institute, Theni,
Tamil Nadu, India

Carcass characteristics of Tellicherry kids under intensive and semi-intensive systems of management in Tamil Nadu

K Chinnamani, J Muralidharan and AK Thiruvankadan

Abstract

An experiment was conducted to evaluate the carcass characteristics of Tellicherry kids under intensive and semi-intensive systems of management. Sixteen weaned kids were selected at random and they were placed in two treatments comprising of eight kids in each group. The dressing percentages of intensive and semi-intensively reared kids were differed highly significantly ($p < 0.01$). The primal cuts percentage did not differ significantly for legs, loin, rack, breast and foreshank and the neck and shoulder. The loin eye area was highly significant ($p < 0.01$) between intensive and semi-intensively reared kids. Kidney and omental fat was significantly ($p < 0.05$) higher in intensive system when compare to semi-intensive system of rearing in Tellicherry goats.

Keywords: Tellicherry kids, carcass traits, intensive, semi-intensive system

Introduction

Goats were among the first farm animals to be domesticated (Ensminger and Parker, 1986) [6]. Goat is a very important component in dry land farming system. In India, 2019 goat population is 148.49 million. Goats are among the main meat producing animals in India, whose meat (chevon) is one the choicest meat with huge domestic demand. The goat is an animal that adapts itself readily to almost any climate especially in arid region. It is hardy prolific and can be cheaply reared (Banerjee, 2004) [2]. Tellicherry goat, originally distributed in Calicut, Cannanore and Malapuram districts of Kerala (Acharya, 1982) [1], also widely seen in western districts of Tami Nadu. In the home tract, the climate is hot-humid, whereas, in Tamil Nadu these animals are mostly reared in hot-dry regions. The information on different system of management for the carcass character of Tellicherry kids is very scanty. Hence, the present study was under taken to the carcass characteristics of Tellicherry kids under intensive and semi-intensive systems of management.

Materials and Methods

Sixteen weaned Tellicherry kids were selected at random and they were placed into two different treatments comprising of eight kids in each group at Instructional Livestock Farm Complex, Veterinary College and Research Institute, Namakkal, Tamil Nadu, India. One group (T₁) was kept under intensive system of rearing and other group under semi-intensive system of rearing (T₂). Kids were given an adaptation period of 15 days before the start of the experiment. The T₁ group was kept under stall feeding. The group T₂ was sent for grazing. Stall-fed kids were offered concentrate feed, Co-4 grass (Bajra X Napier hybrid variety), subabul (*Leucaena leucocephala*), sorghum (*Sorghum bicolor*) stover and ground nut haulms (*Arachis hypogaea*) at different times of the day to meet the nutrient requirement as per the nutrient requirements recommended by ICAR (2013). Group T₂ kids were allowed for grazing from 9.00 a.m. to 4.30 p.m. The males were grazed separately and maintained in separate pens. The grazing land of the institution was having *Cenchrus* pasture, naturally growing grasses (*Heteropogon contortus*, *Cynodon dactylon*, *Deschampsia cespitosa*, *Echinochola colona*), shrubs (*Ageratum houstonianum*, *Bambusa vulgaris*, *Colotropis gigantean* and *Canna indica*) and tree fodders (*Azadirachta indica*, *Albizia lebbek*, *Acacia leucophloea*, *Leucaena leucocephala*, *Gliricidia sepium* and *Ficus religiosa*).

At the end of the study (150 days), six male kids from each breed were slaughtered and carcass characteristics were studied. The parameters viz., carcass weight, dressing percentage, wholesale cuts were recorded.

Animals were not given feed 12 hours prior to slaughter, but had free access to water. Animals were weighed on electronic weighing scale prior to slaughter. After bleeding, head was separated first, legs were cut and carcass was hoisted on a moving overhead rail. Flaying was done and skin was weighed. At this point of time, carcass length (length in centimeters from point of the aitch bone to the point of shoulder, when the carcass was in its normal hanging position) was taken and then evisceration was done. Hot carcass weights were taken and then the carcasses were split up into forequarters and hindquarters by using meat and bone cutting instrument and the weights were recorded. Then, by using the same equipment, the carcasses were split into different wholesale cuts *viz.*, neck and shoulders, ribs and foreshank, rack, loin and legs and the respective portions were weighed. The loin eye area was measured with a help of parchment paper by taking the impression of loin muscles on it and drawing the outline by using a marker pen. Then the outline was superimposed on a graph sheet and the area was measured in square centimeters. Then the wholesale cuts were weighed separately. Weight of all the edible organs, offals, fat, blood, head and skin were noted. The data thus collected were analysed statistically as per the methods suggested by Snedecor and Cochran (1996) [13].

Result and Discussion

The carcass characteristics of Tellicherry kids under intensive and semi-intensive system of rearing are presented in Table 1. Reveals that the Tellicherry male kids were reared under intensive system had no significance difference in pre-slaughter weight (PSW), empty live weight (ELW) and hot

carcass weight when compared to semi-intensive system of rearing. However, Rajkumar *et al.* (2010) [41] and Jayanthi (2015) [8] reported significantly higher PSW, ELW and hot carcass weights in Sirohi and Salem Black goats, respectively.

Dressing percentage and loin eye area

Dressing percentage on live weight basis was significantly higher in intensively reared group than semi-intensive group of Tellicherry kids. The observed dressing percentage was comparable with the values reported for Kanni Adu (Thiruvankadan *et al.*, 2000; Usha *et al.*, 2006) [14, 16]; Kodi Adu (Thiruvankadan, 2012) [15] and Barbari, Marwari as well as Jamunapari goats (Das and Raj Kumar, 2010) [4]. On contrary, Bhatt *et al.* (1991) [3] and Jayanthi (2015) [8] observed no significant difference in dressing percentage in Black Bengal and Salem Black goats of India. Paramasivam *et al.* (2002) [10] reported significantly higher dressing percentage in semi-intensively reared kids, when compared to extensively reared kids.

The system of management had highly significant ($p < 0.01$) effect on loin eye area (cm^2). The intensively reared kids had higher loin eye area than semi-intensively reared kids. The significantly ($p < 0.01$) higher loin eye area observed in Tellicherry male kids reared under intensive system of rearing in accordance with other parts of the India (Karim *et al.*, 2007; Jayanthi, 2015) [9, 8]. The higher loin eye area indicated better muscle development and nutrient utilization in goats reared under intensive management system compared to semi-intensive management system. The Loin eye area observed in Tellicherry kid was moderately higher than Jamunapari, Barbari and Marwari kids (Das and Rajkumar, 2010) [4].

Table 1: Carcass characteristics of Tellicherry kids under intensive and semi-intensive system of rearing

Parameters	Intensive system (T ₁) (n=6)	Semi-intensive system (T ₂) (n=6)	T-value	p-value
Pre-slaughter weight (kg)	24.73±9.93	24.16±1.26	0.314 ^{NS}	0.380
Empty live weight (kg)	19.51±1.26	17.92±1.26	0.638 ^{NS}	0.268
Hot carcass weight (kg)	12.08±0.79	10.63±0.76	1.316 ^{NS}	0.109
Dressing percent (live weight basis)	47.89±1.16 ^b	44.46±0.74 ^a	2.483 [*]	0.019
Carcass length (cm)	61.20±0.96	58.83±2.12	1.018 ^{NS}	0.171
Loin eye area (cm^2)	11.95±0.69 ^b	9.12±0.38 ^a	3.569 ^{**}	0.004
Whole sale cuts(Kg)				
Leg	3.61±0.13	3.38±0.11	1.276 ^{NS}	0.115
Loin	1.25±0.12	1.12±0.08	0.926 ^{NS}	0.189
Rack	1.68±0.08	1.47±0.10	1.598 ^{NS}	0.072
Breast and fore shank	3.73±0.25	3.33±0.26	1.115 ^{NS}	0.145
Neck and shoulder	1.36±0.13	1.15±0.10	1.210 ^{NS}	0.127
Edible offals (%)				
Liver	0.42±0.01	0.39±0.01	1.486 ^{NS}	0.084
Heart	0.11±0.00	0.11±0.00	0.117 ^{NS}	0.455
Kidneys	0.08±0.00	0.08±0.00	0.594 ^{NS}	0.284
Spleen	0.05±0.00	0.04±0.00	0.698 ^{NS}	0.253
Testicle	0.23±0.02	0.26±0.01	1.128 ^{NS}	0.148
Kidney fat	0.15±0.01 ^b	0.10±0.01 ^a	1.899 [*]	0.045
Omental fat	0.67±0.03 ^b	0.49±0.04 ^a	2.935 ^{**}	0.008
Non-edible offals (%)				
Blood	0.80±0.06	0.82±0.03	0.305 ^{NS}	0.385
Head	1.72±0.08	1.58±0.03	1.624 ^{NS}	0.074
Skin	2.31±0.14	2.13±0.19	0.741 ^{NS}	0.239
Stomach and intestine (full)	5.39±0.29	5.75±0.32	0.822 ^{NS}	0.215
Stomach and intestine (empty)	1.56±0.04	1.67±0.04	1.783 ^{NS}	0.052
Trachea and lung	0.31±0.02	0.30±0.01	0.366 ^{NS}	0.362

Means bearing the different superscript within a row differ significantly, *Significant ($p < 0.05$), ** Highly significant ($p < 0.01$), NS- Non significant, n-number of observations.

Percent yield of edible and in-edible offal

The yield of edible offals (Percent) of Tellicherry kids are presented in Table 1. The mean of yield of in-edible offal (Percent) of Tellicherry kids reared under intensive and semi-intensive systems did not differ significantly. The Percent yield of edible by products was not influenced significantly by the system of rearing except for kidney fat and omental fat. Significant difference ($p < 0.05$) in the Percent yield of kidney fat and omental fat ($p < 0.01$) was observed. However, Rajkumar *et al.* (2010)^[4] reported significantly higher omental fat in intensively reared Sirohi kids when compared to semi-intensively reared kids slaughtered at nine months age. In Salem Black kids, Jayanthi (2015)^[8] reported higher kidney fat in intensively reared kids when compared to semi-intensively reared kids at six and nine months of age. The Percent yield of in-edible offals was not significantly ($p > 0.05$) influenced by the systems of management. Similarly, Jayanthi (2015)^[8] reported no significant ($p > 0.05$) difference in in-edible offals in Salem Black kids between intensive and semi-intensive systems of management. On the contrary, Paramasivam *et al.* (2002)^[10] reported significantly ($p < 0.05$) higher in-edible offal in Barbari kids.

Yield of whole sale cuts

The mean yield of whole sale cut (Kg) of Tellicherry kids reared under intensive and semi-intensive systems did not differ significantly. Elangovan *et al.* (2010)^[5] observed no difference in the yield of cuts at different systems of management in Kanni Adu kids. Likewise, Singh *et al.* (2009)^[12] reported that the wholesale cuts of Jamunapari kids maintained under different feeding regimens did not differ significantly. In the same study, the weight of cut portion of leg, loin, neck and shoulder and breast and fore shank was significantly ($p < 0.05$) higher in kids managed intensively. However, when expressed as percentage of hot carcass weight, there was no significant difference between management systems.

Conclusion

Tellicherry male kids reared under intensive system of management in the present study had significantly ($p < 0.01$) higher loin eye area, as an index of improved muscling and growth. There was a significant difference ($p < 0.05$) in dressing percentage between intensive and semi-intensive systems of rearing on PSW basis. The Percent yield of edible by products was not significantly influenced by the systems of management except for kidney and omental fat. Percent yield of in-edible offals were not significantly influenced by the systems of management. The male kids reared under intensive system had no significant ($p > 0.05$) difference in pre-slaughter weight, empty live weight and hot carcass weight when compared to semi-intensive system of management at nine months of age.

Acknowledgements

The authors are thankful to Tamil Nadu Veterinary and Animal Sciences University, Chennai for providing necessary facilities, funds and support to carry out the research work.

References

1. Acharya RM. Sheep and Goat Breeds of India. FAO Animal Production and Health Paper 30, FAO, United Nations, Rome, Italy; c1982.
2. Banerjee GC. A Text Book of Animal Husbandry.

3. Oxford & IBH Publishing Co. Pvt.Ltd. New Delhi, 8th edition; c2004. p. 933-961.
3. Bhatt AS, Singh RA, Verma SK, Gupta BS. Carcass traits and economics of meat production in kids under different management systems. Indian J Anim. Sci. 1991;61(10):1149-1151.
4. Das AK, Rajkumar V. Comparative study on carcass characteristics and meat quality of three Indian goat breeds. Indian J Anim. Sci. 2010;80(10):1014-1018.
5. Elangovan G, Ra.Muralidharan, Tensingh Gnanaraj P, Murugan M, Kumararaj R. Carcass characteristics of Kanni Adu goat under different systems of management. J Vet. Anim. Sci. 2010;41:43-46.
6. Ensminger ME, Parker RO. Sheep and Goat Science. Fifth Edition, Denville, Illinois: The interstate Printers and Publishers inc; c1986.
7. ICAR. Nutrient Requirements of Sheep, Goat and Rabbit. Indian Council of Agriculture Research, Krishi Anusandhan Bhawan, Pusa, New Delhi; c2013.
8. Jayanthi D. Studies on growth performance, carcass characteristics and meat quality of Salem Black goat. Ph.D., Thesis submitted to the Tamil Nadu Veterinary and Animal Sciences University, Chennai-600 051; c2015.
9. Karim SA, Porwal K, Kumar S, Singh VK. Carcass traits of Kheri lambs maintained on different system of feeding management. Meat Science. 2007;76:395-401.
10. Paramasivam A., Arunachalam S, Sivakumar T, Ramesh V. Growth performance and carcass traits of Barbari goats under different system of management. Indian J Anim. Sci.2002;72(11):1016-1018.
11. Rajkumar V, Agnihotri MK, Arun Das K, Ramachandran N, Singh D. Effect of age on carcass characteristics and meat quality of Sirohi goat kids reared under semi-intensive and intensive management systems. Indian J Anim. Sci. 2010;80(8):775-780.
12. Singh MK, Rai B, Singh NP. Environmental and genetic effects on growth traits in Jamunapari Kids. Indian J Anim. Sci. 2009;79(6):582-586.
13. Snedecor GW, Cochran WG. Statistical Methods. 8th Edition. The Iowa state university press, Ames, Iowa, USA. 1996.
14. Thiruvankadan AK, Panneerselvam S, Kandasamy N. Distribution, characteristics and production performance of Kanni adu goats of Tamil Nadu. J Veterinary & Animal Sciences. 2000;70(7):723-727.
15. Thiruvankadan AK. Kodi Adu goat - A Monograph. Tamil Nadu Veterinary and Animal Sciences University, Chennai-51, Tamil Nadu; c2012.
16. Usha S, Sivakumar T, Akila N. A study on carcass characteristics of Boer crossbred kids. Indian. J Small Rumin. 2006;12(1):119-121.