

Feedlot Performance and Carcass Characteristics of Norduz Male Kids

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Abstract: The aim of this study was to determine the feedlot performance and carcass characteristics of Norduz male kids. The initial and the final body weights and average daily weight gain of these animals during the feedlot feeding period were 18.6 kg, 26.1 kg and 133.3 g, respectively. During the fattening period, average daily concentrated feed consumption and feeding efficiency of these animals were 604 g/day per head and 5.6 kg, respectively. At the end of the fattening period, 10 heads of Norduz male kids were slaughtered in order to determine carcass characteristics. Slaughter weight, hot and cold carcass weights and dressing percentage were found as 25.4 kg, 10.6 kg and 41.5%, respectively. In this study, bone, muscle, subcutaneous fat and inter-muscular fat contents were found on wholesale racks. According to the cold carcass weight, bone, muscle, subcutaneous fat and inter-muscular fat proportion were found as 38.9, 46.4, 3.7 and 6.4%, respectively.

Key words: Carcass characteristics, feedlot performance, norduz male kids

INTRODUCTION

Turkey is ranged on 16th place with 7,022,000 head regarding goat population in the world where 735 millions of goats are estimated. The largest part of goat population is involved by hair goats (6,676,000 heads) followed by Angora goats (346,000 heads) in Turkey^[1]. Beside Kilis, Malta and some local races, there are few number of exotic dairy goats^[2]. Among local goat races, there is a breed called Norduz which is described different from hair goat by breeders of the area, due to its relatively higher milk yield, pre-weaning viability, growth performance and disease resistance^[3]. This breed takes its name from the Norduz area of Gürpınar district in Van province situated in Eastern part of Turkey. This area is located at the 38, 20 north longitude and 43, 25 east latitude and 1745 m above sea level^[4]. This study aimed to determine the feedlot performance and carcass characteristics of male Norduz kids.

MATERIALS AND METHODS

Ten Norduz male kids which were born in 2003 and weaned at the age 2.5 months-old and raised in Research and Experiment Farm of Yüzüncü Yil University were used in the study. All kids were entirely suckled during 14 days after birth, then fed with dried minced clover beside the suckling until weaning. Kids were fed with concentrated feed during a 15-day adaptation period after weaning. Each animal was weighted with two days interval after

Table 1: Composition of feed mixture

Materials in the mixture	Proportions (%)
Barley	68.6
Cotton seed pulp	30.2
CaCO ₃	0.3
Salt	0.5
Preliminary vitamin mix. (Rovimix302 S)	0.3
Preliminary mineral mix. (R Mineral 2)	0.1
Crude Protein (%)	14-15
Energy (NB/kg)	690-700

feeding following the adaptation period. Kids were placed in a three-side-open shed tree sides after anti-parasitical treatments in order to initiate the study. The animals had ad-libitum access to concentrated mixture (Table 1). Throughout the trial, 100 g of dried clover was daily given for each kid. Feed intake was daily determined according to the difference between feed offers and refusals. Water was available for the animals during the trial. Each animal was weighted bi-weekly with a digital scale, sensitive to ± 50 g of weight. The study was terminated in 56 days before the kids reached the sexual maturity for preventing any odor problem. Final live body and slaughtering weights were determined by weighting the animals at the last two days of the trials. Body measurements of the animals were also determined before slaughtering^[5].

Dress-off items (hearth, lungs-liver, spleen, omental and mesenteric fat, hide, four feet and head) were weighted during slaughter-dressing. The dressed carcasses had the skinned tail, thymus, diaphragm, kidneys, perinephric and pelvic fat and also the testicles. After hot carcasses were weighted, carcasses were placed

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in a chiller operating at 4°C for 24 hrs. Then, chilled carcasses were weighted, measured and were split along the midline^[6]. The two sides were as symmetrical as possible with each containing one kidney and the perinephric and pelvic fat. The left side was cut into wholesale cuts according to specifications indicated by^[7]. The wholesale rack (6th through 12th ribs) was removed from left side of each carcass and separated into soft tissue (lean, subcutaneous and intermuscular fat, waste-ligament) and bone and tissues were investigated. The descriptive statistical analyses were done with SAS statistical program^[8].

RESULTS AND DISCUSSION

Bi-weekly investigated feed intake and weight increase in Norduz goat male kids are summarized in Table 2.

As seen in the Table 2, average daily weight gain of these animals was 133.30 g. Kor^[25] determined the average daily body weight gain of Damascus x Hair goat crossbred male kids as 153.0±0.52 g.^[9] found this trait in Genman fawn x Hair crossbred kids as 202.1±0.51 g.^[10] reported this trait in male kids of hair goats as 122±0.71 g.^[11] used 110 heads of male kids belonging to the genotypes having Capretto or Chevon type carcasses in a study investigating the effect of genotype on the carcass quality. The average daily body weight gain of crossbred male kids of Boer x Angora, Boer x Feral (wild), Boer x Saanen, Saanen x Angora, Saanen x Feral (wild) crosses were found as 127, 148, 167, 140 and 156 g, respectively.^[12] quoted based on McGregor^[13] that the average daily body weight gain in male kids had ranged 30 to 200 g depending on their genetic potentials. As seen from these references, the average daily body weight gain of Norduz male kids (133.3 g) was not much lower than the mentioned races.

Keskin *et al.*,^[14] investigated the effect of the different protein levels on the feedlot performance of Damascus goat kids and observed that feed conversion coefficients and daily feed intakes for 16 and 13% protein levels were 8.22 and 11.14 per head and 1.08 kg, 0.91 kg day⁻¹ per head, respectively. Feed intake and feed conversion coefficient in our study lasting in 56 days were 604 g and 5.6, respectively. Feed intake in our study was similar to the findings of Güneş^[15]. This researcher had found 573.2 and 550 g feed intakes in Saanen x Hairy (B1) and Saanen x Kilis crossbreds kids, respectively.

Results related to slaughter characteristics in Norduz male kids are given in Table 3.

Hot dressing percentage of these animals was calculated as 42.9±0.48%.^[16,17] reported the hot dressing

Table 2: Feedlot performance and feed intake in Norduz male kids (n:10)

Feedlot performance traits	$\bar{x}\pm S\bar{x}$
Initial body weight (kg)	18.6±1.02
Final body weight after feedlot (kg)	26.1±1.47
Average daily gain (g)	133.3±11.1
Feed intake traits	
Daily feed intake(g)	604
Feed evaluation coefficient	5.6
Feeding period (day)	56

Table 3: Slaughter characteristics of Norduz male kids (n:10)

Traits	Weights (kg)	Proportion at slaughter weight (%)
	$\bar{x}\pm S\bar{x}$	$\bar{x}\pm S\bar{x}$
Slaughter weight	25.4±1.45	-
Hot carcass weight	10.1±0.72	-
Hot dressing percentage (%)	-	42.9±0.48
Head weight	1.77±0.10	6.99±0.29
Four feet weight	0.77±0.09	3.16±0.50
Pelt weight	2.40±0.16	9.42±0.27
Omental fat weight	0.33±0.07	1.18±0.21
Heart, lung, liver weight	1.21±0.08	4.75±0.11

Table 4: Carcass characteristics of Norduz goat male kids (n:10)

Traits	Weight	Proportion at slaughterweight (%)
	$\bar{x}\pm S\bar{x}$	$\bar{x}\pm S\bar{x}$
Cold (chilled) carcass weight (kg)	10.6±0.71	-
Cold dressing percentage (%)	41.5±0.50	-
Left half carcass weight (kg)	5.17±0.34	-
Testicles weight (kg)	0.18±0.02	1.66±0.08
Kidneys weight (kg)	0.09±0.01	0.85±0.03
Kidney-knob and pelvic fat weight (kg)	0.23±0.03	2.08±0.20
	At left half carcass (kg)	At left half carcass (%)
	$\bar{x}\pm S\bar{x}$	$\bar{x}\pm S\bar{x}$
Hind leg weight	1.60±0.09	31.1±0.43
Neck weight	0.56±0.05	10.8±0.37
Shoulder weight	1.02±0.06	19.8±0.26
Flank weight	0.85±0.12	16.6±2.41
Back-loin weight	1.23±0.09	23.6±0.38

Table 5: Tissues analyses of rack joint (n:10)

Traits	Tissue values	Proportion of tissues (%)
	$\bar{x}\pm S\bar{x}$	$\bar{x}\pm S\bar{x}$
Rack weight (kg)	0.40±0.03	-
Muscle weight (kg)	0.19±0.02	46.4±0.89
Bone weight (kg)	0.15±0.01	38.9±1.63
Subcutaneous fat weight (kg)	0.02±0.00	3.7±0.57
Inter-muscular fat weight (kg)	0.03±0.00	6.4±0.80
Waste weight (kg)	0.01±0.00	3.7±0.25
MLD area (cm ²)	7.02±0.38	
Evaporation loses	-	0.9±0.18
Total	-	100.0±0.00

percentage of the hair goat male kids raised in intensive systems of production as 44.9±1.7%. Acharya^[17] observed that the dressing percentage ranged from 42.7 to 55.4% depending on the slaughter age, feeding and the race of the goats. Verma *et al.*,^[18] found that the hot dressing percentages of the 6, 10 and 14-month-old male goats that were raised in intensive systems of production were 39.44, 45.47 and 46.14%, respectively. Different

researchers reported that dressing percentage in goats ranged from 46 to 48% and stated that variation in hot dressing percentages was due to the genotype and the weights of rumen and internal organs^[19-21]. Our finding was in accordance with findings of these researchers. Hot dressing percentage of Norduz goat obtained in our study is not lower than those observed in other goat breeds.

Table 4 shows the characteristics of the cold carcass and wholesale cuts. Hind leg had the highest proportion (31.09%) in the left half carcass. All wholesale cuts proportions are in line with the findings of other researchers^[9,21-23]. Tissue analysis on whole or half carcass requires pretty much time and labor beside the economical loss in carcass. For this reason, only wholesale racks from 6 to 12th ribs were used in tissue analysis (including *Musculus Longissimus Dorsi* (MLD) area) in order to fast and cost-effective determination of tissue composition (Table 5)^[24]. Both subcutaneous and inter-muscular fat amounts are high as in all intensive system of production. Kor^[25] reported that subcutaneous and inter-muscular fat amounts of single and twin Damascus x Hair crossbred kids were as 6.2 and 7.9%; 5.9 and 8.1%, respectively. However, subcutaneous and inter-muscular fat amounts obtained in the present study (3.68 and 6.365%) are in favor of Norduz goats comparing to the other goat races^[11,12,16,21] reported that subcutaneous fat of castrated Chevon type goats were higher than of Capretto type goats in their study. These researchers also reported that MLD areas and omental fat amounts in Capretto and Chevon type goats were as 9.0 cm² and 12.1 cm²; 2.44 and 4.17%, respectively. Omental fat amount obtained in the present study (1.18%) was advantageous in Norduz goat in which adequate value of MLD area (7.02 cm²) was obtained.

Usually, feedlot performance traits, such as growth rate and feed intake are influenced by genotype in goats^[12,26]. Feedlot performance values obtained from Norduz male kids are not lower than these obtained other goat breeds.

CONCLUSION

It can be suggested that Norduz goat is not only an appreciated breed in Van province, due to its high pre-weaning viability, but also an advantageous goat with its feedlot performance and carcass characteristics in 56 days intensive fattening systems. Nevertheless, further studies are needed to determine the yield performance and potential and to investigate the improvement of production capacity in Norduz goat.

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