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EVALUATION OF BOER GOAT PERFORMANCES IN TWO CLIMATIC ENVIRONMENTS

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ABSTRACT

In the examination, we evaluated 33 and 25 does kidding performance and their kids daily weight gains recorded on 30. and 100. day. The flock in Hungary were grazing grass during the daytime, in the goat house at night, except one month post-partum when goats were kept indoore, supplemented with meadow hay and maize grains (300-400 g). The flock in North Carolina was penned on the millet pasture with hay and a concentrate mix (500 g) supplement.
The Boer goat appeared just a bit more prolific in the North Carolinian than Hungarian environment concerned fecundity (96 % vs. 94 %), percentage multiple birth (83 % vs. 77 %) and litter size (2.17 vs. 2.00). The kids daily gain were 156 g/day and 206 g/day in the American ranch and 145 g/day and 201 g/day in the Hungarian one during the test, respectively. Gross meat production (litter weight weaned per doe) was higher by circa 7 kg in the American than Hungarian ranch (54 kg vs. 47 kg).
The better performances showed by Boer goats in the North Carolinian flock were rather due to dietary differences (earlier availability of grazing forage, high protein concentrate-mix in a higher daily portion vs. maize grains) and a greater flock homogeneity (the North Carolinian kids daily gain were less standard deviation, than Hungarian kids) than to climatic differences. Nevertheless, the Boer goat is worthy of breeding in Hungary providing correct nutrition conditions.

Keywords: Boer goat, birth type, grazing, growth, kidding traits

INTRODUCTION

The goat meat is popular among consumers for its low fat (3 %) and high protein content (20 %). In Hungary, only a couple of hundred meat type goats are bred since the prevailing breed is the Hungarian native goat, and the imported dairy goat breeds (Alpine, Toggenburg, Saanen) comprise a lower proportion. At the present, only 4.2 % of total goat meat production is exported (*KSH*, 2003). The increasing demand for goat meat in the world market incites the breeders for improving this item in quantity and quality. In this respect the Boer goat seems promising for its good body conformation hence dressing percentage, fast growth rate (200 g per day), high prolificacy (litter size of circa 2) and good milk production (1.5-2.5 kg per day, with 43 g protein and 77 g fat per kg), as reported by Casey & Van Niekerk (1988a; 1988b), Lu & Potchoiba (1988), Lu (1997). Generally, the Boer goat is regarded as very adaptable. Yet, the environment may influence the inherent performance traits.We evaluated therefore the reproductive and growth performances of the Boer goat in two climatic environments.

MATERIALS AND METHODS

The study was carried out in two ranches of the Boar goat under different climatic environments: one in Hungary of temperate climate and the other in North Carolina nearby the ocean. The feeds as well differed between the two ranches by item and nutrient composition (*Table 1*). The flock in Hungary were grazing grass during the day, supplemented with meadow hay and maize grains (300-400 g) in the goat

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house at night, except one month post-partum when goats were kept indoor on meadow hay and maize. The flock in North Carolina were penned on the pasture and grazed millet-grass with meadow hay and a concentrate-mix (500 g) supplement in the morning. The kids were milk-fed and also consumed the feed items given to does at free access till weaning.

Table 1

Nutrient composition of the feed items

Item	DM	CP	CF	CFb	NE_l	NE_g
	g/kg	g	g	g	MJ	MJ
	per kg DM					
			Hungary			
Grass	271	122	33	343	6.09	4.17
Meadow hay	841	121	15	336	5.70	3.64
Maize grains	870	129	53	23	9.02	6.75
			N.Carolina			
Millet-grass	166	100	15	315	4.74	2.40
Meadow hay	880	155	18	300	5.68	3.47
Concentrate-mix	888	182	68	101	7.34	5.06

The kidding performance was evaluated in 33 and 25 does, representing 66 % and 12.5 % of the doe flock in Hungary and North Carolina, respectively. The does aged 1-3 years were mated with bucks in late October 2001. They kidded from late March till mid April in 2002.
Goat kids were weaned at 100 days of age. We evaluated the folowing traits: number of does aborted, number of does kidded, birth types, number and sex of kids born and weaned, litter size, kid weight at birth, at day 30 and 100, kid daily gains, and litter weight at weaning.
Data were statistically evaluated by program SPSS 10 (2-sample t-test, Pearson simple-correlation).

RESULTS AND DISCUSSION

The kidding performance of the Boer goat does differed to some extent by ranch (Table 2). Of 33 does in the Hungarian ranch 2 aborted, 7 had singles, 17 had twins and 7 had triplets, totalling 62 kids. Of 25 does in the American ranch 1 aborted, 4 had singles, 10 had twins and 10 had triplets, totalling 54 kids. The corresponding litter size was 2.00 and 2.17 due to 77 and 83 % of multiples, surpassing the previous figures (1.93 and 75.5 %) obtained in South Africa by Campbell (1984). The sex ratio of kids was 0.53 in each flock.

Table 2

Reproductive performance of Boer goats in the two environments

Trait	*Hungary*	*North Carolina*
Number of does bred	33	25
Number of does aborted visually	2	1
Fecundity %	94	96
Number of does with singles	7	4
twins	17	10
triplets	7	10
Litter size	2.00	2.17
Number of kids born and weaned	62	54
Sex ratio	0.53	0.53

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The overage kid weights agreed at birth (3.4-3.4 kg) then differed by 0.4 and 0.5 kg at day 30 and 100, and a higher daily gain (by circa 10 and 5 g) there (Table 3), approximating to previous figures (230 g vs. 180 g per day) reported by the Hungarian Association of Alpine & Saanen Goat Breeders (1999).

Table 3

Growth performance of Boer goats in the two environments

	Birth weight	Kid weight 30	at day 100	Kid gain 30	till day 100
	kg	kg	kg	g/day	g/day
			Hungary		
Singles (n=7)	4.0+/-0.2	8.9+/-0.7	27.9+/-3.2	163+/-22	239+/-31
Twins (n=34)	3.4+/-0.3	7.8+/-0.8[a]	24.2+/-2.9	147+/-27[a]	208+/-29
Triplets (n=21	3.3+/-0.3	7.3+/-0.5[c]	21.1+/-2.1[a]	137+/-17[b]	179+/-21
Overall (n=62)	3.4+/-0.4	7.7+/-0.8	23.5+/-3.4	145+/-30	201+/-34
			North Carolina		
Singles (n=4)	3.9+/-0.5	9.3+/-0.6	29.3+/-1.0	180+/-35	254+/-5
Twins (n=20)	3.4+/-0.2	8.3+/-0.6[a]	25.6+/-2.4	163+/-16[a]	222+/-23
Triplets (n=20)	3.3+/-0.2	7.8+/-0.4[c]	22.3+/-1.2[a]	150+/-11[b]	190+/-13
Overall (n=54)	3.4+/-0.3	8.1+/-0.6	24.0+/-2.8	156+/-24	206+/-29

a=P<0.05, b=P<0.01, c=P=0.001

Birth weight, kid weights and daily gains varied by birth type as reported by Aucamp & Venter (1981), Barry & Godke (1997). The means decreased consistently through the increase in litter size: significance were between twins at 30 day (P<0.05) and between triplets at 30 day (P<0.001; P<0.01) and 100 day (P<0.05). Consequently litter size correlated negatively with birth weight (r=-0.65; r=-0.60) and kid weight at 30 day (r=-0.57; r=-0.67) and 100 day (r=-0.62; r=-0.79), significant at P<0.001 level. Also a negative correlation of litter size with birth weight (r=-.34) and kid weight at 60 day (r=-0.41) was found in the Boer goat by Honping (2001).
Gross meat productions, i.e., litter weight weaned per doe, appeared higher by circa 7 kg in the American than Hungarian ranch (54 kg vs. 47 kg).

CONCLUSIONS

- The Boer goat appeared just a bit more prolific (higher fecundity and litters size) and a higher meat producing (higher kid daily gain) in the North Carolinian than Hungarian environment.
- These better performances were rather due to the dietary differences (earlier availability of grazing forage, high protein concentrate-mix in a higher daily portion vs. maize grains) and a greater flock homogeneity (the North Carolinian kids daily gain were less standard deviation, than Hungarian kids) than to climatic differences.
- Nevertheless, the Boer goat is worthy of breeding in Hungary providing correct nutrition conditions (green forage post-partum and quality concentrates till weaning).

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