

The influence of age and reproductive status on quality and quantity of cashmere produced by Boer goats under South African conditions

W.A. van Niekerk[#], S. Keva, M. Roets^{1*} and R.J. Coertze

Department of Animal & Wildlife Sciences, University of Pretoria, Pretoria 0002, South Africa

¹ARC-ANPI, Private Bag X2, Irene 0062, South Africa

Abstract

The aim of this study was to evaluate the quality and quantity of cashmere produced by Boer goats in South Africa. No significant differences were found between reproductive status and qualitative and quantitative characteristics of cashmere produced by Boer goats. Both fibre production and fibre diameter did not differ between two to three year old and older animals. Boer goats under typical South African conditions produced a low but good quality cashmere.

Keywords: Cashmere, age, reproductive status, production, Boer goat

[#]Corresponding author. E-mail: willem.vanniekerk@up.ac.za

^{*}Present address: P.O. Box 67822, Highveld Park Ext. 12, 0169, South Africa

Introduction

According to Braun (1998) the world demand for cashmere was 12000 tons, while only 8000 tons being produced resulting in a deficit of 4000 ton. There are several goat breeds worldwide, rather than a distinct breed, which possess the ability to produce cashmere. This has led to numerous studies in various countries in search of goats that have the ability to produce high quality cashmere, and South Africa is no exception. The objective of this study was to quantify the quality and quantity of cashmere produced by Boer goats at different ages and productive stages.

Materials and Methods

Twenty-four Boer goat females were identified for combing cashmere in 1997 at Mara Research station, Limpopo Province, South Africa. The animals ranged between 3-9 years of age. The females were open or pregnant. The animals were combed every two weeks using a plastic comb during the shedding season (July to September). The total yield of each animal was collected separately in small plastic bags, weighed and analysed for cashmere and total fibre production as well as fibre diameter.

The goats in Mara were kept on natural veld, mainly *Acacia tortilis*, known as sweet veld. In summer the goats selected mainly *Commiphora africana*, forbes and a little bit of grass. In winter the animals selected mainly *Boscia albitrunca* and grass. No supplements were supplied (I. du Plessis, personal communication, 2003, Mara Research Station, Limpopo, South Africa).

The Proc GLM (General Linear Models) procedure by SAS (1994) was used to analyze the data. All main effects (age and reproductive status) and all possible first-order interactions were included in the initial model. Significance of difference between least square means was determined by the Fischer Test (Samuels, 1989).

Results and Discussion

There were no significant differences in cashmere, guard hair, total fibre and fibre diameter between open and pregnant females (Table 1). This is in contrast with the reports by Zhou *et al.* (2003) who reported a significant effect of pregnancy on fibre production. Corbett (1979) reported that up to 10% and 12% reduction in wool production was due to pregnancy and lactation, respectively. Summer & Bigham (1993) suggested that the reduction in production might be due to the higher demand of nutrients for reproduction compared to fibre growth. Kidding during the cashmere-growing season can delay the initiation of the cashmere follicles. For this reason and to prevent fibre losses, kidding should be avoided before moulting or shearing. The other possible reason for the non-significant differences could be that pregnant females tend to have higher feed intakes which could counteract the negativeness of fibre production.

Pattie & Restall (1992) reported significant differences in down weight and diameter with increasing age. The results presented in Table 2 show non-significant effects of age on cashmere and guard hair yield and fibre diameter. Although not significant, total fibre, guard hair and guard hair diameter and cashmere production increased from younger to older animals. This may be due to the high nutrient requirements for growth by young animals or the variance between the body tissues and wool growth (Corbett, 1979). Braker (1997) reported a reduced cashmere but increased guard hair production with age, but Reis (1979) reported a reduction in wool growth with age which correlates with changing patterns of feed intake and diet selection.

Table 1 The influence of reproductive status on yield and diameter of cashmere and guard hair of Boer goats at Mara

Reproductive Status	Total fibre (g)	Cashmere (g)	Guard hair (g)	Cashmere diameter (μm)	Guard hair diameter (μm)
Open	27 \pm 4.5	23 \pm 4.1	3 \pm 0.7	12 \pm 0.1	71 \pm 2.3
Pregnant	21 \pm 4.8	15 \pm 4.4	4 \pm 0.8	11 \pm 0.2	68 \pm 2.4

^{ab}Column means with common superscripts do not differ significantly ($P > 0.05$); \pm = Standard error

Table 2 The influence of age on total fibre, cashmere and guard hair yields of Boer goats at Mara

Age	Total fibre (g)	Cashmere (g)	Guard hair (g)	Cashmere diameter (μm)	Guard hair diameter (μm)
2 – 3 yrs	18 \pm 4.5	14 \pm 4.1	3 \pm 0.7	12 \pm 0.1	69 \pm 2.3
4 yrs +	30 \pm 4.8	24 \pm 4.4	4 \pm 0.8	11 \pm 0.2	70 \pm 2.4

^aColumn means with common superscripts do not differ significantly ($P > 0.05$); \pm = Standard error

Conclusion

Boer goats in South Africa produce good quality cashmere which is in the acceptable range as recommended by the cashmere industry, but total cashmere production is low. Scientific programs in breeding, selection and nutrition must be followed to optimize production.

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