BODY CONDITION AND MILK PRODUCTION ON SAANEN GOATS AS ECONOMIC FACTORS

STAREA DE SANATATE SI PRODUCTIA DE LAPTE A CAPRELOR SAANEN CA FACTORI ECONOMICI

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Abstract: *The authors examined the body condition of Saanen goats on 5 farms; they registered the milk yield, the number of kids, the date of births and the age of does. They tried to find an answer to how the body condition changes during lactation and how it affects milk production as well as which body condition is best in the various periods of lactation to achieve the best milk yield. There were 37 ewes on the first farm, 17 on the second, 45 on the third, 17 on the fourth and 80-90 on the fifth.*
Based on the examinations we can conclude that the most milk was produced on farm No. 1. during lactation, where at the beginning of lactation the body condition score was 2.5, in the middle it was around 3 while at the end of lactation the body condition score reached 3.3 (r = -0,18). The more the other farms differed from these data the less milk they produced.

Key words: *goat, body condition, milk production,*

INTRODUCTION

The ideal condition changes according to the gender and the age too. For does during the dry period the right conditions are between 2,75-3,5-; during the time of the delivery between 2,75-3,5, at the beginning of the lactation (0-45 days) around 2 and in the additional section of the lactation the 3 condition is the most appropriate(*Meyers-Rayban*, 2004). *Cabbidu et al*, (1999) think in goats in the course of a lactation there is a negative correlation between the average condition and the milk yield (r = -0,24),

although the correlation between these two characteristics are minimal at the beginning of the lactation, but grows strong (r = -0,39) in the end. The statement of the value of the condition is suitable for the survey of the energy state of the goats and forage problems (*Bertoni and Cappa*, 1984).
The ideal condition changes during the year: in the early reproduction period it is 2 or 3 in female goats *(Spahr,* 2004).

MATERIAL AND METHODS

We examined the body condition of Saanen goats on 5 farms. We registered the milk yield, the number of kids, the date of births and the age of does. There were 37 ewes on the first farm, 17 on the second, 45 on the third, 17 on the fourth and 80-90 on the fifth. The feed, which was supplemented with feed mix at the morning and evening milking, however the quality and the quantity of the grazed and supplemented food were different. We determined the body condition of the animals on each farm at the time of the monthly milking. We measured the amount of milk with a Berango type ewe-milk measuring.
Microsoft Excel 5.1 was used for the systematisation of the data, while for processing SPSS for Windows 15.0 program. One factor variance analyses and Pearson-correlation were applied for the calculations.

RESULTS AND DISCUSSION

Milk production and body condition

When comparing the farms we can see (Figure 1), that the animals on Farm No. 1 were in the best condition and this leading place was kept throughout the examined period. If we compare the farms in terms of milk production (Figure 2), then again Farm No.1 was in the first place producing the most milk. On this farm at the beginning of lactation the values of the condition were 2.5-, around the 90th day 2.7, then later 3, while at the end of lactation 3.3. With body conditions like these one mother produced 2.5 kg of milk at the beginning of the period, while at the end 2.25 kg of milk daily.

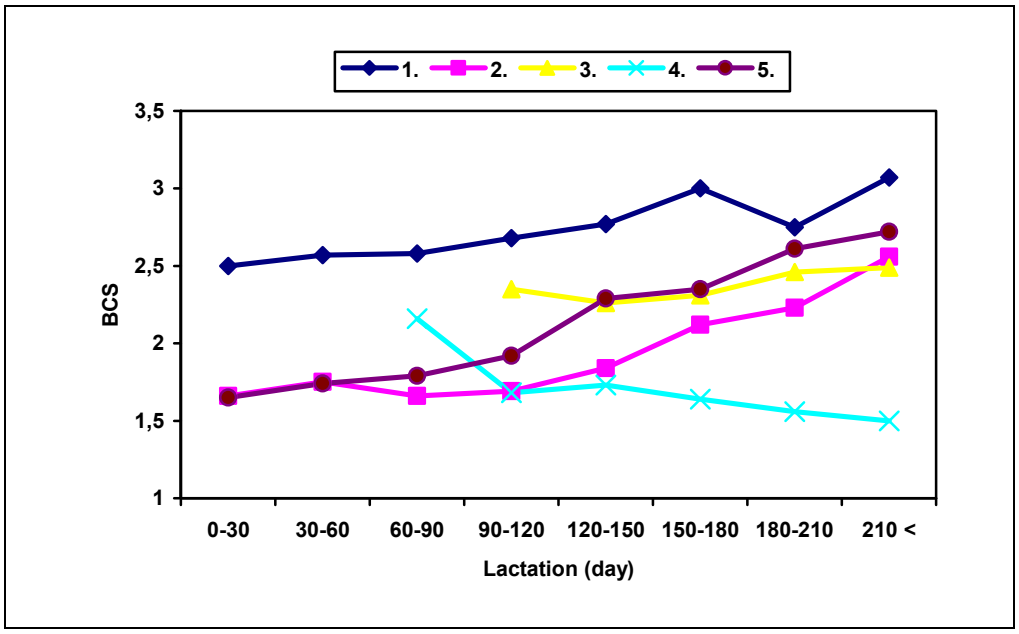


Figure 1: Changes of body condition scoring with regard to lactation on five farms

The BCS values on Farms No. 3 and No. 5 were similar from the 120th day, slightly increasing without any significant deviation. Examining their milk production (Figure 2) we can see the values moving close together; there is not a considerable difference here. It is necessary to mention that they approached the values of Farm No. 1 very much at the same time, so even these conditions were suitable for milk production.

In case of Farm 2 we could observe that in the first part of lactation the animals produced a lot with very weak body condition, however the body of the animals got exhausted soon, and from about the 120th day the milk production decreased significantly (Figure 2), dropping behind increasingly from the Farms No. 1, 3, and 5. Their condition improved though according to this, but it fell behind the previous (Figure 1).

The worst values regarding both the condition and milk production can be seen on Farm No. 4, with considerable differences from the other farms. The animals were in such bad condition here, that the total milk production

decline (after the 210the day 0.36 milk kg/day/mother) was not able to improve the condition.

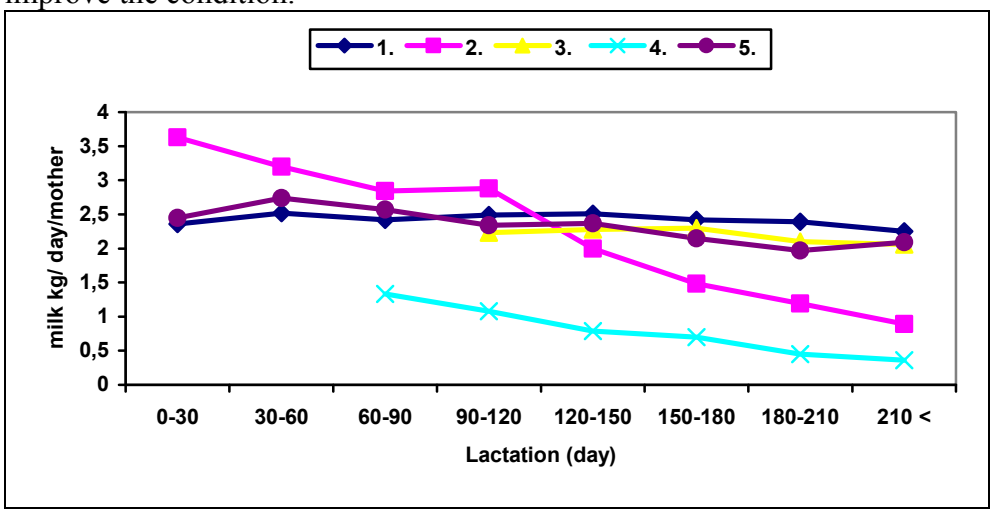


Figure 2: Changes of milk production with regard to lactation on five farms

Table 1

Changes of body condition scoring with regard to lactation on five farms

Lactation intervallum (days (1)	$\bar{x} \pm s$ (2)				
	1. n = 37	2. n = 17	3. n = 45	4. n = 17	5. n = 80
0-30	2,50 ± 0,55 a	1,66 ± 0,62 b	-	-	1,65 ± 0,79 b
30-60	2,57 ± 0,56 a	1,75 ± 0,50 b	-	-	1,74 ± 0,69 b
60-90	2,58 ± 0,48 a	1,6 ± 0,56 b	-	2,16 ±0,39c	1,79 ± 0,68 b
90-120	2,68 ± 0,68 a	1,69 ± 0,54 b	2,35 ±0,61 a	1,68 ± 0,41 b	1,92 ± 0,76 b
120-150	2,77 ± 0,73 a	1,84 ± 0,50 b	2,26 ± 0,68 c	1,73 ± 0,49 b	2,29 ± 0,75 c
150-180	3,00 ± 0,80 a	2,12 ± 0,59 bc	2,31 ± 0,62 b	1,64 ± 0,45 c	2,35 ± 0,72 b
180-210	2,75 ± 0,72 ab	2,23 ± 0,53 b	2,46 ± 0,56 ab	1,56 ± 0,40 c	2,61 ± 0,77 a
210 <	3,07 ± 0,75 a	2,56 ± 0,67 abc	2,49 ± 0,52 a	1,50 ± 0,40 d	2,72 ± 0,70 c

Period of lactation (1), Mean ± standard deviation (2)
The means with the different letter are significantly different within the same period of lactation.

Table 1 shows the precise values of body condition. Moreover, it is indicated (letters) where there was a significant difference between the farms within a given lactation period concerning the body condition. It is

clear that Farm No. 1 was significantly better at condition compared to the others at the beginning of lactation. It is only between the 180th and the 210th days that the values of the other farms approach these values, which means there is not significance with the exception of Farm No. 4.

Table 2

Changes of milk production with regard to lactation on five farms

Lactation intervallum (days (1)	$\bar{x} \pm s$ (2)				
	1. n = 37	2. n = 17	3. n = 45	4. n = 17	5. n = 80
0-30	2,36 ± 0,67 a	3,63 ± 0,84 b	-	-	2,45 ± 0,46 a
30-60	2,52 ± 0,82 a	3,20 ± 0,53 b	-	-	2,74 ± 087 a
60-90	2,42 ± 0,77 a	2,84 ± 0,60 a	-	1,33 ± 0,45 b	2,57 ± 0,85 a
90-120	2,49 ± 0,75 ab	2,88 ± 1,41 a	2,23 ±0,68 b	1,08 ± 0,42 d	2,34 ± 0,99 b
120-150	2,51 ± 0,78 a	2,00 ± 0,76 b	2,28 ± 0,67 ab	0,79 ± 0,43 d	2,37 ± 0,92 ab
150-180	2,42 ± 0,80 a	1,48 ± 0,49 b	2,30 ± 0,58 a	0,70 ± 0,45 d	2,15 ± 0,68 a
180-210	2,39 ± 0,32 a	1,19 ± 0,60 b	2,10 ± 0,62 ac	0,45 ± 0,35 d	1,97 ± 0,60 c
210 <	2,25 ± 0,69 a	0,89 ± 0,35 b	2,06 ± 0,58 a	0,36 ± 0,19 b	2,09 ± 0,91 a

Period of lactation (1), Mean ± standard deviation (2)
The means with the different letter are significantly different within the same period of lactation.

From Table 2 we can read (based on the letters) where was a significant difference between the farms in the milk production within a given lactation period. The Farms No. 1 and 5 started from an almost identical level at the beginning of lactation. The production of Farm No. 2 was significantly higher. Between the 150-180th days the values of Farm No. 1, 3 and 5 did not differ significantly from each other, but they did from the Farms No 2 and 4, which differed largely even compared to each other

Correlation between milk production and body condition

On Farm No. 1 we did not find a considerable correlation between body condition and milk production at the beginning of lactation, because none of the values change significantly (Figure 1). The condition moved between the ideal values, therefore it did not influence the milk production showing a well-persisting lactation curve. But between the 150-180th days

the milk production decreased and the condition increased, therefore there is a negative correlation (r = -0.35). The mothers were in good body condition in the other parts of lactation, thus it did not influence the milk production (Table 3.)

On Farm No. 2 (Figure 2) the correlation at the beginning of the lactation was positive, averagely strong (r = 0.50). Then from the 120th day it showed a negative a contact getting stronger gradually, between the 180-210th days r = -0.43, which means that the decrease of the milk production resulted in the improvement of the condition (Table 3. table). These values justified the physiological peculiarity of the milking type animals perfectly, that they are capable of producing a large amount of milk even at the cost of their own body condition but, as we can see it, not for long.

Table 3.

Correlations between body condition and milk production at the farms

	1. farm n =37	2. farm n = 17	3. farm n = 45	4. farm n = 17	5. farm n = 80
0-30	-0,07	0,17	-	-	-0,19
30-60	-0,17	**0,50**	-	-	0,05
60-90	-0,15	0,38	-	0,11	-0,14
90-120	-0,08	-0,05	-0,07	**0,27**	0,06
120-150	-0,16	-0,24	-0,16	0,13	0,10
150-180	**-0,35**	-0,39	0,15	0,46	-0,19
180-210	-0,11	**-0,43**	-0,07	0,51	-0,21
210 <	-0,14	-0,32	0,08	**0,62**	**-0,38**

On Farm No.3 the correlation examination did not manifest a contact because of the slight change of the factors because of the good body conditions similarly to that of the Farm No. 2. The condition was suitable therefore it did not influence the milk production.

On Farm No. 4 the correlation examination manifested a positive contact getting stronger continually, because the body condition and the milk production decreased. Between the 90-120th days it was r = 0.27, while between the 210-240th days it was already r = 0.62. In such a skinny stock even the decrease of milk production was unable to improve the body condition.

This result justifies the literature statement that it is not allowed to let the body condition of the animals get under 2. The question arises, that on Farm No. 2, where the body condition was similarly weak, why the mothers were able to produce well in the first half of the lactation.

The milk production, as all physiological processes, is a complicated one; many factors influence it – for instance the kid number. Out of the 17 mothers 6 had triple kids there, while none was here. At the ones giving birth to triplets the quantity of placenta lactogen (PL), which affects the development of the mammary glands, is much more, since there are 3 placentas, therefore much more milk is produced, even in animals in bad body condition.

On Farm No. 5 there was not a significant difference either in body condition or in milk production until about the 130th day of lactation, this is the reason why we did not find the correlation between them. From the 150th day, however, the milk production started to decrease, therefore the condition improved, showing a negative correlation getting stronger gradually after the 210the day, r = -0,38 (Table 3).

CONCLUSIONS

When comparing the body condition and the milk production of the animals on the five farms we may conclude that the BCS of Farm No. 1 number is the most ideal one in terms of milk production. The body condition was 2.5 at the beginning of lactation, around the 90^{th} day of lactation it was 2.7, then later 3, while at the end of lactation the condition improved to 3.3.

There higher were the differences from these the condition values on the other farms the lower became the quantity of milk produced there. The animals were in the best body condition on Farm No. 1 followed by Farm No. 5 and No. 3 without any significant deviances compared to each other from the 120th day. Then Farm No 2 and finally Farm No 4 followed. The same rank can be seen with regard to milk production.

The statement which can be deducted from the experiment is equal to the data announced in the literary overview (*Spahr* 2004; *Meyers-Rayban*, 2004).

If we can keep the animals' condition on a suitable level then milk production also stays on a suitable level in the course of lactation showing a

well persisting lactation curve (Farms No 1., 3., and 5). It is typical in this case that there is a correlation between body condition and milk production only at the end of lactation. The decrease of the milk production results in the improvement of the condition, which means a negative correlation (r = -0.38).

Beside bad condition (1.7) the animals were capable of considerable milk production only for a short time at the beginning of lactation, therefore the condition influenced the milk production averagely strongly (Farm No. 2: r = 50 and Farm No. 4: r = 0.40 in the average of the examinations).

To sum up we can conclude that our Body Condition Scoring method can be applied well with milk producer Saanen mother goats; and considering the results of the examinations may serve the improvement of milk production results.

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