Abstract: The authors examined the number of the progeny born by each mother-goat, the dates of kidding and the age of females on five Saanen-goat farms. They tried to find out how the increase in the lactation number of the mother affect the number of progeny; in which lactation are these values the highest and until which lactation is it worth keeping mothers in production. There were 37 does on farm No. 1, 17 on farm No. 2, 45 on farm No. 3, 17 on farm No. 4 and 80-90 on farm No. 5. Based on the results of the examinations they concluded that the average number of progeny was the highest from lactations 3rd to 5th. In case of farm No. 5 the highest progeny value 2.52 (r = 0,37; P < 0,01) was found in the 5th lactation. The lowest average progeny number (1.40) was observed in the fourth lactation on farm No. 4. When considering all five farms altogether, it was in the fourth lactation that the mothers had the highest number of progeny (2.14), however, the values were high (2.00; 1.85) in lactations 7 and 8 as well. The farm effect proved to be significant in the number of progeny.

Key words: Saanen goat, number of progeny, lactation number

INTRODUCTION

There was a steady increase in goat population all over the world during the last two decades (1990-2007). Asia continuously maintained the top position, and they currently hold 64% of the goat population. Africa follows them (29%), then America (4.8%), Europe (2.1%) and finally the EU (1.63%). The number of goats significantly decreased in Europe (-18.1%) and in the EU (-3.8%) (Kukovics et al, 2009).

The prolificacy has influence on the economy and milk production. Significantly more of the milk yield of the twin calving mothers compared to those having one kid (Subires et al, 1988; Boichard et al, 1989; Mioc 1991; Vecerova and Krizek 1993; Niznikowski et al, 1994 a). Schandl (1947) found that the number of progeny also varies with the age of the mother goat. 25% of the one-year-old goats, 66,6 % of the two-year-old animals and 75% of the older ones give birth to twins.

The prolificacy increases until the mothers get 4 years old. Crepaldi et al(1998) found that the progeny is increasing until the fifth lactation, although many authors have reported that the 4th the lactation is peak performance. According to other authors the highest litter size is in the fourth and fifth lactation, too (Suberies et al, 1989; Cherix, 1990; Niznikowski et al, 1994 b). Crepaldi et al (1998) say, that prolificacy is averagely 1.2 at the firs calving, 1.5- at the second calving and 1.7 in the third calving of the Alpine goats. Steine 1975) found a significantly higher litter-number in winter than in summer in Norway. In contrast, Crepaldi et al (1998) found no significant effect of calving time on
the litter size, although there is larger prolificacy in winter. The number of births \( R^2=0.16 \) and the calving time \( R^2=0.12 \) have influence on the length of the lactation and also on the milk yield. As expected, the lactation is longer in winter. Mioc (1991) examined 89 mother goats and found that, if there is twin calving than the length of lactation is longer than in case of the one-kid mother goats.

In our study we wanted to find that how the increase in the lactation number of the mother goats affect the number of progeny; in which lactation are these values the highest and until which lactation it is worth keeping the mothers in production.

**MATERIAL AND METHODS**

The examinations were performed on five Saanen goat farms. Grazing was the basis for nutrition, which was supplemented with feed mix (corn, wheat, barley, and triticale) at the milking in the morning and in the evening. However, the quality and quantity of the grasslands and feed mix were different. The animals could graze on burned-out, sparse-grass field except in May, the rainy month, on Farm 2 and 4, so the feeding of the animals was not satisfactory. We examined 56 mother goats on Farm 1, 17 does were on 2 Farm, 45 animals on Farm 3 and 17 on Farm 4. The examinations were carried out on Farms 1, 2, 3 and 4 from the beginning of May until the end of September, 2008, for five months, monthly. On farm No. 5 the examinations were continued for three years (2005-2007), with 80-90 mother goats.

We recorded the date of birth of the animals and calving data, and the number of progeny. The mother goats were grouped according to lactation number on each farm. The examinations were carried out based on the combined data of the five farms altogether. The figures were uploaded and systematized on computer with Microsoft Excel 5.1 programme. For data processing SPSS for Windows 15.0 programme was used. The relationship between the variables was examined with correlation analysis (Pearson's phenotypic correlation coefficient). The results were illustrated in table and in chart.

**RESULTS AND DISCUSSIONS**

The assessment of individual farms

<table>
<thead>
<tr>
<th>Farm</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On the first Farm</strong></td>
<td>As expected, in the lowest (1.73) litter-number (progeny per one goat) was found in the first lactation, and the then it was consistently good - ranged around 2.00 - values, did not change significantly during the lactation number increases (Table 1).</td>
</tr>
<tr>
<td><strong>On the second Farm</strong></td>
<td>After the lower value of the first lactation (1.71), high progeny data was observed in all groups, but the values increased significantly in the fourth lactation. During the examined period, out of 17 mothers it was 6 that had triple kids.</td>
</tr>
</tbody>
</table>
On the third Farm there were no young mothers, but it can be seen that the 4th lactation had the highest litter size (1.85) and from there a decreasing trend was observed. (7 and 8 lactation had high values, but there was only 1-1 animal).

On the fourth Farm, the litter size was very low in each group (except the 7th, where there was only one female). The average progeny was the lowest (1.47) here. The mothers were in poor condition due to incomplete feeding, so they could not produce results typical of the species. The pasture quality was poor.

Table 1

<table>
<thead>
<tr>
<th>Lactation</th>
<th>Farm 1</th>
<th>Farm 2</th>
<th>Farm 3</th>
<th>Farm 4</th>
<th>Farm 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>x ± s</td>
<td>n</td>
<td>x ± s</td>
<td>n</td>
<td>x ± s</td>
</tr>
<tr>
<td>1</td>
<td>1.73±0.45</td>
<td>14</td>
<td>1.71±0.48</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>2.00±0.51</td>
<td>15</td>
<td>2.66±1.15</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>2.14±0.37</td>
<td>7</td>
<td>2.00±0.81</td>
<td>3</td>
<td>1.66±0.65</td>
</tr>
<tr>
<td>4</td>
<td>2.00±0.00</td>
<td>6</td>
<td>2.50±0.70</td>
<td>2</td>
<td>1.85±0.68</td>
</tr>
<tr>
<td>5</td>
<td>2.00±0.66</td>
<td>8</td>
<td>3.00±0.00</td>
<td>1</td>
<td>1.40±0.54</td>
</tr>
<tr>
<td>6</td>
<td>2.00±0.00</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>1.33±0.57</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>-</td>
<td>2.00±1.41</td>
<td>2</td>
<td>2.00±0.00</td>
</tr>
<tr>
<td>8</td>
<td>2.00±0.96</td>
<td>2</td>
<td>3.00±0.00</td>
<td>1</td>
<td>2.00±0.00</td>
</tr>
<tr>
<td>Average</td>
<td>1.99</td>
<td></td>
<td>2.15</td>
<td>1.68</td>
<td>1.47</td>
</tr>
</tbody>
</table>

n = number of mother goats

The means with the different letters are significantly different, within farms (P < 0.05).

On the fifth Farm, the litter size increased gradually together with the number of lactation, without significant differences compared to the neighboring values, until fifth lactation (Table 1). But, in the sixth year, there was a significant decrease compared to the previous year. The peak litter size was in the fifth year (2.52), but the fourth year followed closely (2.40).

On the 1st, 2nd, 3rd and 4th Farms we could not detect significant differences between the groups, due to the low number of animals, only on the fifth Farm.
The combined evaluation of farms

On the basis of the assessed data of the five farms, litter number was the highest with the mother goats in their fourth and fifth lactation, with a fourth-lactation peak 2.18 \( (r = 0.16; P < 0.01) \), however the litter size of the mother goats in the third and sixth lactation did not differ significantly. The lowest litter size was in the first lactation \( (1.68/\text{mother}) \).

The means with the different letters are significantly different \( (P < 0.05) \).

![Figure 1. Change of the litter size depending on the number of lactation on all farms](image)

The highest litter size was experienced in the fourth and fifth lactation by Schandl (1947); Suberies et al, (1988); Cherix, (1990); Niznikowski et al, (1994a), as well as Crepaldi (1998). From the sixth lactation the decrease in litter number was gradual; however the change did not prove to be significant. The litter size of the mother goats in the second and third as well as in the seventh and eighth lactation was very similar, therefore no significant changes were experienced between them (Figure 1).

CONCLUSIONS

We can observe that although on each farm are kept Saanen breed goats the performance of the animals was quite different. The farm effect proved to be significant in case of the progeny.

During the first lactation the mother goats did not produce the litter number characteristic for the species \( (1.8) \) on either farm. The highest number of kids was born during the third, fourth and fifth lactations on individual farms, however in this period the average litter number by lactation showed significant difference. Most of the progeny peak of production was on the fifth Farm \( (2.52/\text{doe}) \) in the fifth lactation \( (r = 0.37, P < 0.01) \), and the lowest one was on the fourth Farm \( (1.50/\text{doe}) \), in the fifth lactation too. The results show that the number of lactation affects the litter size.

Based on the total data, the litter size was highest by mother goats in their fourth lactation \( (2.18) \). During the following lactations, there was no significantly decrease in the litter size compared to the previous lactation. Accordingly we concluded that it is also...
worth keeping 7 and 8-lactation animals in production in case they produce the litter size as found in the research. Since the number of kids was above the value typical for the species (1.8) (Molnár -Molnár, 2000) I suggest keeping their offspring in production as well.

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