

RESULTS REGARDING THE REPRODUCTION PERFORMANCES OF FOUR GOATS POPULATIONS IN THE SOUTHERN ROMANIA

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Abstract

The researches in the present paper were carried out upon four goat populations in the southern Romania, on 718 adult goats, in two breeds, reared in different production systems, with different mating season and activity. There were recorded primary data about the reproduction activity and there were calculated the reproduction indices, by the classic formulas in the special literature. The results were compared by breed and reproductive category, and there were calculated the main statistically parameters. The main conclusion reveals the fact that the reproduction activity in Carpathian breed farms is placed on an acceptable to good level; this breed could be continuously improved by a more careful monitoring of the factors affecting the reproduction function.

Key words: birth index, fertility and fecundity index, prolificacy

INTRODUCTION

There are two production systems of goats rearing in Romania, an intensive one, based on using some quality improved pastures and concentrated forages during the whole year, and a traditional extensive one, which uses only the natural pastures.

To developing the intensive system in goats rearing in our country, breeders should focus their attention to the used food quantification in the production potential for each flock and also to applying the up to date reproductive techniques.

Animal breeding including the local goat populations by applying a rigorous selection based upon special criteria and using some crossing with special breeds may represent certain ways of significant improving of the productive potential of the local goat populations.

MATERIALS AND METHODS

The studied biologic material in the present paper consisted in adult and youth goat

livestock in four private farms in the Southern Romania. The researches regarding the reproduction were carried out on 718 adult goats, as following: 130 females and 4 bucks, Carpathian breed in Arges farm, 306 females and 9 bucks, Banat White breed in Ialomita farm, 104 females and 3 bucks in Prahova farm and 158 females and 4 bucks in Giurgiu farm, the last two livestock being Carpathian breed.

Table1. Structure of adult goats livestock on farms

Specification	Females	Males	Total
Argeş Farm	130	4	134
Giurgiu Farm	158	4	162
Ialomița Farm	306	9	315
Prahova Farm	104	3	107
Total	698	20	718

The assessment of the reproduction activity in the studied goat populations was carried out with the aid of the reproduction indices, calculated by the classic formulas in the special literature. There were calculated the main reproduction indices: fertility index,

prolificacy index and birth index. To analyze the parameters necessary to calculate the reproduction indices, there were studied the reproduction data registers from all the studied farms. It may mention that all the reproductive works in the studied farms were assisted by qualified staff and all the animals had adequate conditions for feeding and keeping.

In Ialomița farm, the mating season starts between August 15 – September 1 and the beginning of November. The female youth is 18 months old and they have 30-40 kg body weight. In the farm the natural conducted mating is practiced, for one male there are 34 females with 5-7 mating/male/day. The calving period is February 15 - April 30, and the suckling period is 60-75 days. After the weaning period, the reproductive youth is fed with balanced food portions.

In Argeș farm, the mating period starts in September, There is applied the free natural mating on the pastures. The sex ratio is 1male: 32 females. The calving is during February. The suckling period is 60 days. The female youth are mated at 18 months. Before this, they are kept separately, being adequate fed and cared.

În Argeș farm, the mating period lasts during September and October, and the calving is in February and March. There is applied the free natural mating. The sex ratio is 1 male: 35 females. The suckling period is 60 days. For their first days, the kid goats stay together with their mothers, but after a week they are separated by a wooden fence which permit only their passing and there are fed 3 times a day during the first month and 2 times a day during the second month. After 3 weeks they were administered good quality hay. After weaning, the female youth is raised separately from the adult animals. Their age for reproduction is 18 months; the males are used almost 3 years, starting from 15-20 months.

In Giurgiu Farm the conducted natural mating is used. The sex ratio is 1 male: 40 females, the kids' origin is known. Reproductive female youth is 9-10 months. The mating period is between August and October. The kids are weaned depending on their gender, the males are weaned at 60 days old, and

females at three months. After weaning, the females retained for reproduction benefits of a special care about feeding and keeping being able for reproduction in the first year of life.

RESULTS AND DISCUSSIONS

Following the study of the reproduction reports in Ialomița farm it reveals that from 306 goats in the reproductive yield, the number of mated goats was 303 heads and the number of mother goats was 282 heads. It was also recorded a number of 11 aborted goats. Regarding the obtained products, the total number of the kids was 474 heads, from which 463 were born alive, 7 were non viable and dead 4 heads. The number of aborted kids was 13, so only two of the 11 aborted goats had twins (table 2).

Table 2. The number of goats and their products, on breeding categories, in Banat White breed

Specification	Heads
Reproductive females	306
Inseminated females	303
Females with abortions	11
Females with kids	282
Kids	474
Kids calved alive	463
Number of viable kids	7
Dead kids	4
Aborted kids	13

After analyzing the number of goats per each reproduction category and their products, there were calculated the main reproduction indices and present them in table 3 and chart 1.

From table 3 data it may notice that the fecundity index was 93,07%, being almost the same in the special literature for this breed. For example, Zamfirescu (2009), following the research upon a population of Banat White found the value 93,3% for the fecundity index. [8]

The value of the fertility index was slightly lower, 92.16%, due to the fact that 3 goats could not be mounted in the mating season due to their health status. The value of the prolificacy index was 168.08%, being a good value for this breed comparatively the value of the prolificacy index in the special literature.

Table 3. Reproduction indices in Banat white goats (%)

Specification	Value (%)
Fecundity index	93.07
Fertility index	92.16
Prolificacy index	168.08
Birth index	154.90

Zamfirescu (2009), found the value 166,70% for the prolificacy index in a population of Banat White in Mureş County[8]. Meanwhile, the value in this research is 32% lower than the other reported by other authors, as 200% (Taftă, 2004) [4].

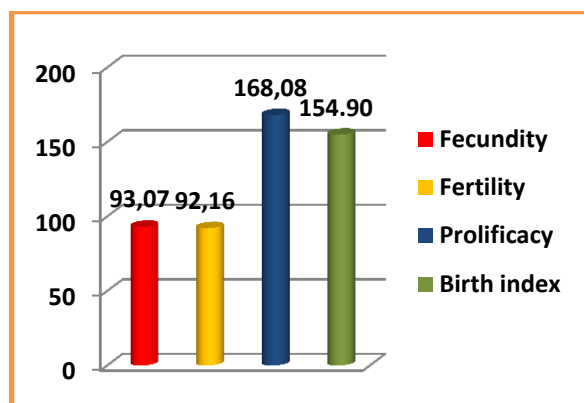


Chart 1. Reproduction indices values in Banat White breed population (%)

The birth index was 154,90%, a good enough value for the goats in Banat White breed and superior for the goats in Carpathian breed. As a conclusion, analyzing the reproduction indices, the reproduction activity in Ialomița farm is placed at a better place, which could be improved by a good management of the

factors which determined the reproduction function maximization.

In the farms where the Carpathian breed is reared, the mating season is different, in September in Argeş County Farm, in September and October in Prahova County Farm and August-October in Giurgiu County Farm. Also, the practised mating system is different. In Argeş and Prahova County Farms there is a free natural mating and in Giurgiu County farm is a guided natural mating system. The sex ratio is also different 1 male/32 females, in Argeş County farm, 1 male/35 females in Prahova County Farm and 1 male/39.5 females in Giurgiu County farm.

Analyzing the breeding records in the three studied farms where the Carpathian breed is reared, it can conclude that the number of the reproductive female goats is 392 heads, the mated goat number is 390 heads, the calved goats number was 370 heads, and the aborted goat number was 10 heads (table 4).

Regarding the obtained products, it was noticed that the total number of kids was 523 from which 516 live kids, 3 non viable kids and 4 dead kids. The number of aborted kids was 12, so only 2 goats recorded twins (table 4).

After analyzing the number of goats per each reproduction category and their products, there were calculated the main reproduction indices and present them in table 5 and chart 2.

Table 4. The number of goats and their products, on breeding categories, in the Carpathian breed

Specification	Heads			
	Argeş Farm	Giurgiu Farm	Prahova Farm	Total Carpathian
Reproductive females	130	158	104	392
Inseminated females	130	156	104	390
Females with abortions	3	6	1	10
Females with kids	124	145	101	370
Kids	182	198	143	523
Kids calved alive	180	193	143	516
Number of viable kids	0	3	0	3
Dead kids	2	2	0	4
Aborted kids	4	7	1	12

From table 5 data, one may notice that the fecundity index was 95.15% as average in the

3 farms, being 2 % higher than the value recorded in Banat White.

The highest value of the fecundity index was recorded in Prahova farm (97.12%), followed by Giurgiu farm (92.95%). The higher values

recorded in Prahova and Argeş farms could be explained due to the mating system.

Table 5. Reproduction indices in Carpathian goat populations (%)

Specification	Value (%)			
	Argeş Farm	Giurgiu Farm	Prahova Farm	Total Carpathian
Fecundity index	95.38	92.95	97.12	95.15
Fertility index	95.38	91.77	97.12	94.76
Prolificacy index	146.77	136.55	141.58	141.63
Birth index	140.00	125.32	137.50	134.27

There are also similar researches on the national level where the fecundity index value was between 93.81% and 96.36% (Pascal 2009; Taftă, 2004) [3,4]. Also, there are researches where the average value for Carpathian breed in the north-eastern region of the country is 97.4%, with a higher variability (88.1-99.1%) (Zaharia, 2011a). [6]

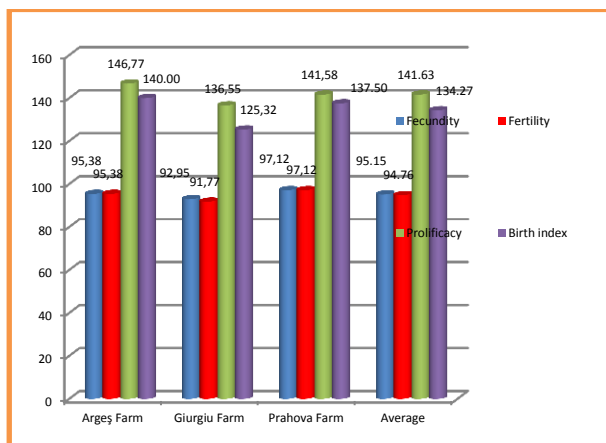


Chart 2. Reproduction indices values in Carpathian breed populations (%)

The average value of the fertility index is 94.76%, being the highest in Prahova farm (97.2%), intermediary in Argeş farm (95.38%) and lower in Giurgiu farm (91.77%). It could noticed that there was recorded the same values in Prahova and Argeş farms, due to the used free mating system.

The average value of the prolificacy index for Carpathian breed in this research is 141.63% being closed to the characteristic values for this breed (135-160%), as it is recorded in the special literature (Călin, 2004; Pascal 2007, Taftă, 2008) [1, 2, 5]. The prolificacy index is higher in Argeş farm (146.77%), intermediary

in Prahova farm (141.58%) and the lowest in Giurgiu farm (136.55%).

There were also on the national level research paper where the recorded values for this breed are lower or higher. For example, Zaharia (2011b), in a research on a Carpathian livestock in north-eastern region found an average value of 129.6%, with variability between 121.2 and 136.3%[6]. Zamfirescu (2009), following the researches on Carpathian breed in Constanța, Mureş and Dâmbovița County found values framed between 120 and 148.68%. [8]

The birth index has an average of 134.27%, which represents a good enough value for Carpathian breed, being higher in Argeş County Farm (140%) and lower in Giurgiu County Farm (125.32%). So, analyzing the reproduction indices, the reproduction activity in Carpathian breed farms is placed on an acceptable to good level, this breed could be continuously improved by a more careful monitoring of the factors affecting the reproduction function.

CONCLUSIONS

Analyzing the reproduction indices, the reproduction activity in Carpathian breed farms is placed on an acceptable to good level; this breed could be continuously improved by a more careful monitoring of the factors affecting the reproduction function. The fecundity index was 95.15% and the birth index has an average of 134.27%, in the 3 farms where the Carpathian breed is reared. The average value of the fertility index was 94.76%, being the highest in Prahova farm (97.12%) and the average value of the

prolificacy index was 141.63%.

In Banat White breed, the value of the fertility index was 92.16%, the value of the prolificacy index was 168.08%. The birth index was 154.90%, a good enough value for the goats in Banat White breed and superior for the goats in Carpathian breed.

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