

Reproductive Performances of Tsigaie Sheep

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Abstract. The main reproductive indexes were calculated during the October 2009 - May 2009 time interval for two Tsigaie ecotypes of the red variety. Data has shown that reproductive activity had good efficiency in sheep belonging to the hill ecotype in the Agricultural Research and Development Station at Turda. In the Reghin sheep belonging to the mountain ecotype disease manifested itself and lead to a decrease in index values below those specific to the breed. We believe this situation to be an exception that does not reflect the true genetic potential of mountain Tsigaie sheep.

Keywords: indexes, reproduction, Tsigaie, sheep, ecotype

INTRODUCTION

Political changes in Romania had a profound influence on sheep breeding. This is mainly illustrated by changes in breed structure and disappearance of large farms in favour of small, subsistence ones. The prevalent breed is Tsurcana. At the same time improved breeds are now scarce and can only be found in isolated populations. The same tendency manifested itself in what concerns the fate of Tsigaie sheep. That is why we believe that its *ex situ* conservation is opportune. From a genetic and therefore productive point of view the Tsigaie is more valuable than the Tsurcana breed. This favours easiness in complying with market requests. In addition because of the breed's resistance to disease and climate adaptation it can be employed for an environment friendly husbandry. These features are all according to the European Agricultural Policy established in 2003 (Paquay, 2004).

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MATERIALS AND METHODS

The studied Tsigaie sheep are kept at the Agricultural Research and Development Station in Turda and the Research and Development Station for Sheep and Goat breeding in Reghin. Reproductive performances were calculated using the appropriate indexes for 605 animals belonging to the first Research Station and 209 from the second. These were chosen based on their pedigree and external appearance.

The indexes were calculated for all the sheep considering the following groups: animals used for reproduction, females in heat, naturally inseminated females, gestated sheep, females that have not gone into heat following insemination, sheep that have given birth,

females that had an abortion, barren sheep, the total number of lambs, lambs alive at birth and the number of weaned lambs. Considering this data and using the proper formulas the following indexes were computed: fertility, sterility, prolificacy, birth index, survival index, production index, oestrus index, fecundity index, insemination index, embryo death index, abortion index and gestation index.

Based on the morphological and production characteristics the two sheep population were considered to belong to two documented and recognized ecotypes, those in Turda to the hill ecotype and those from Reghin to the mountain ecotype.

The animals were kept in similar conditions, in open shelters and the females and lambs were isolated in the first days after birth. They were fed *Gramineae* hay supplemented with cereal feed in the second part of gestation and before weaning.

RESULTS AND DISCUSSION

Animals belonging to the hill ecotype were well prepared for the reproductive season, 94.87% being in heat (Tab. 1). The percentage is high showing that the females were kept properly and reached the required weight for reproductive activity. For the mountain ecotype only 85.31% of the reproductively active females went into heat. This value is below the 90-98% characteristic to the Tsigaie breed. The suboptimal keeping and feeding of young females lead to the 9.56% difference for this index.

The fecundity index was calculated after natural insemination had occurred for all the females. Its values are between 98.25% and 98.56%, which is not much higher than the values characteristic for this breed. We can infer that the sheep were inseminated at the optimum time and became pregnant.

The gestation index calculated at the end of the lambing season 9.14% higher for the mountain ecotype. We can conclude that a large number of females suffered from abortion. This signals the existence in the mountain ecotype, of certain factors which negatively influence gestation.

The insemination index is higher than 100% for both ecotypes which means that more than one mating was necessary for gestation. The mountain ecotype required 38.88% supplementary matings for one birth, meaning 37.11% more when compared with the hill ecotype. If the values of this index are corroborated with the fecundity index, it can be assumed that certain undesired factors are having a negative influence on this rather small group of animals. They are related to the high proportion of very young and old females in the mating population. That can be ascribed to the management aimed at increasing the number of sheep belonging to this ecotype.

Embryo mortality index is above 94% for both ecotypes and therefore, embryo death at the third oestrus cycle after mating being within the limits characteristic for this breed, 5-8%.

In the Station at Turda 98.26% of the pregnant sheep gave birth, while the abortion percentage was of only 1.77%. In the Reghin sheep abortions amounted to 8.73% of all gestations, the gestation index of 87.37% being much lower than the accepted values. Most abortions were due to improper keeping and feeding which facilitated the appearance of infections and parasites.

98.25% of the sheep belonging to the hill ecotype gave birth, thus making the fertility index higher by 10.89% than the one for the other ecotype. Abortions were the main cause for the decline in fertility for these sheep.

Given that the sterility index is complementary to the oestrus index, its values confirm the tendencies presented when mentioning the number of females that went into heat during the reproductive season.

The results of reproductive activity in sheep belonging to the two ecotypes are illustrated by the birth index. 89.75% of the reproductively active sheep in the Turda Station gave birth in the spring of 2009. The 15.06% difference when compared to the mountain ecotype is not to a reduced reproductive potential but to conditions particular to the Reghin Station. Tsigaie sheep have an average prolificacy index of 105 – 114%. Its values for the studied animals are 100.71% in the hill ecotype and 106.66% for the mountain one. This leads to believe that sheep belonging to the mountain ecotype have optimum prolificacy even in less than favourable conditions.

Tab. 1

Reproductive indexes in Tsigaie sheep

Indexes	Hill ecotype	Mountain ecotype	Differences
Oestrus index (E%)	94.87	85.31	9.56
Fecundity index (Fm%)	98.25	98.56	-0.31
Gestation index (G%)	93.22	84.08	9.14
Insemination index (I%)	101.77	138.88	-37.11
Embryo death index (ME%)	94.32	94.44	-0.12
Gestation index (Pg%)	98.26	87.37	10.89
Abortion index (A%)	1.77	8.73	6.96
Fertility index (F%)	93.22	73.46	19.76
Sterility index (Sm%)	0.51	14.69	14.18
Birth index (N%)	89.75	74.69	15.06
Prolificacy index (Pf%)	100.71	106.66	-5.95
Survival index (Cp%)	97.35	76.50	20.85
Production index (Cm%)	91.23	57.14	34.09
Number of reproductively active females (animals)	605	209	396

At Turda 97.35% of the lambs survived until weaning while in Reghin 23.50% died. This difference in survival indexes indicates the suboptimal keeping of sheep during gestation.

No mortalities were registered as shown by the production index. Its value of only for the mountain ecotype 57.14% as opposed to 110-120% (Voia, 2005) is proof of how fragile lambs are before weaning, how easily killed by improper keeping.

CONCLUSIONS

1. When kept and fed in optimal conditions animals belonging to the Tsigaie breed, hill ecotype have reproductive performances which are within the limits specific to this breed. This is proof of its potential and adaptability to the environment provided by the Turda Agricultural Research and Development Station.

2. Reproductive indexes in animals from the mountain ecotype with the exception of prolificacy, fecundity and embryo mortality indexes are lower than those for the other ecotype due to disease and keeping.

3. We believe that the differences in reproductive indexes are not due to different genetic potential but to particular conditions living in the stations.

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