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THE INFLUENCE OF DIFFERENT MAINTENANCE AND EWE'S BODY WEIGHT ON OVULATION RATE AND LITTER BIRTH WEIGHT

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Introduction

The profitability of slaughter lamb production primarily depends on reproduction performance of ewes. The number of born and weaned lambs mainly effects economical success of sheep farm. The reproductive indices are relative to the environmental conditions and the way of taking care of ewes before mating and during pregnancy. The number of born lambs is affected by ovulation rate, conception efficiency and survivability of fetuses (Michels et al., 2000). The prenatal influence of dam is manifested by vitality and body weight of lambs after birth (Nawaz and Meyer, 1991).

The objective of presented study was to determine influence of different environmental conditions and body weight of ewes on ovulation rate and lambs birth body weight of zelaznenska strain of polish lowland sheep.

Material and methods

The investigation has been carried out on 37th zelaznienska ewes of Polish Lowland sheep.

The animals were divided in to two groups. Group I (19 heads) was kept in umbrella roof, group II (18 heads) in barn. The ewes were mated in the end of October whereas lambing started in March. In each group the body weight as well as ovulation rate using laparoscopy method were examined during two succeeding oestrus. The oestrus of all ewes has been synchronized by vaginal sponges (40 mg cronolone). The day after sponge removal the ewes were mated twice in 8 hours interval. In 6th day after mating the number of gestational corpora lutea has been evaluated using laparoscopy method. After lambing the litter size and litter birth weight for each ewe among group has been checked.

The data was analyzed using SPSS statistical procedures.

Results

The ewes kept in umbrella roof had higher body weight of about 4 kg compared to group II, but differences did not show statistical significance.

Ewes from group I showed highly statistically significant greater number of corpora lutea (tab. 1). The average number of ovulations in first oestrus was 1,236, in second 1,763 while last laparoscopic examination showed 2,270 ovulations (fig. 1). The difference between first and third cycle was highly statistically significant. Correlation coefficient between ewe's body weight and ovulation rate was 0,20.

The significant regression estimate of ovulation rate on body weight was -0.16 *corpora lutea*/kg at first, 0,004 at second and 0,014 at third oestrus. The litter size and litter weight at birth was similar in both groups. The ewes body weight showed significant correlation with litter size and litter birth weight. (tab. 2).

The low correlation coefficients between litter size and number of corpora lutea and gestational corpora lutea have been found.

Discussion

The body weight of ewes did not affect their ovulation rate in both groups. Low correlation between these features has been also confirmed by Fogarty, 1995; and Waldron and Thomas 1992.

The low correlations between litter size and number of corpora lutea and gestational corpora lutea can testify about fetuses mortality. In-group kept in umbrella roof the loss reached almost 40%, while in barn 16%. Guerra et al., 1972 found, that fetuses mortality level in merino ewes was 44% and ewe's body weight while they were in good condition, did not affect that trait. The results given by others (Hare and Bryant, 1985, Michels et al., 2000) also confirmed that statement. The higher fetuses mortality rate in-group kept in umbrella roof might be caused by low air temperature during pregnancy.

Conclusion

Ewe's body weight did not influence ovulation rate. The lack of differences in litter size and weight at birth between groups I and II indicate that different environmental conditions did not affect reproductive indices of ewes. However, higher fetuses mortality rate in-group kept in umbrella roof suggests that it was caused by more severe environment.

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Table 1.The influence of different maintenance and ewe's body weight on ovulation rate and litter size and birth weight.

Factor	Group	LSM	Se	Significance
Ewe's body weight (kg)	I II	57,188 53,268	2,640 2,423	NS
Number of corpora lutea	I II	2,625 1,947	0,142 0,131	XX
Litter size	I II	1,562 1,632	0,126 0,115	NS
Litter birth weight	I II	7,775 7,526	0,645 0,592	NS

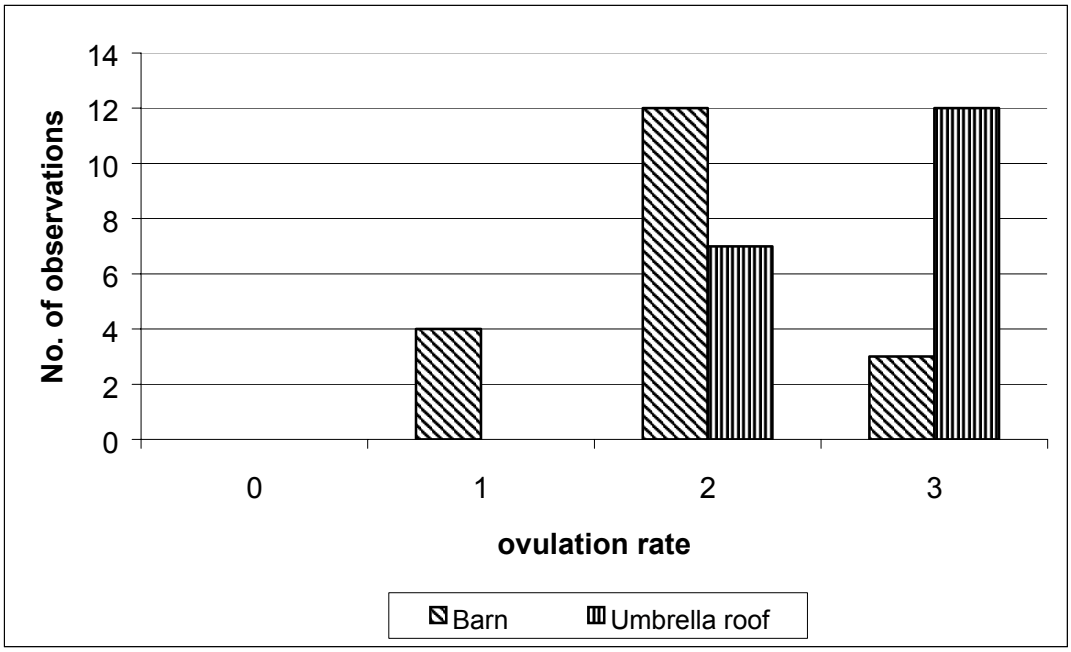
X – P < 0,05; XX – P < 0,01; NS- not significant effect

Table 2. The correlation between ewe's body weight and ovulation rate, litter size as well as litter body weight.

	Ewe's body weight	Litter size	Litter birth weight	Number of corpora lutea
Ewe's body weight		0,411 X	0,509 X	0,201
Litter size	0,411 X		0,636 X	0,054
Litter birth weight	0,509 X	0,636 X		0,171
Number of corpora lutea	0,201	0,054	0,171	

X – P < 0,05 XX – P < 0,01

Fig. 1. Number of observed corpora lutea at group I and II.



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