

ANALYSIS OF THE KIDS MORTALITY – PRELIMINARY RESULTS ANALÝZA MORTALITY KOZLIAT - PRVÉ VÝSLEDKY

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Abstract

Goat husbandry and breeding has a long tradition in Slovakia. In terms of the mortality indicators of kids in the White Shorthaired and Brown Shorthaired breeds, we investigated the most common causes of death of kids up to 56 days of age. From birth to weaning, mortality reached 17.6%. 50% of deaths were caused by malnutrition and related problems - hypothermia, hypoglycemia. Lying down was the second most common cause of mortality of kids. We recorded the most deaths in the 4th week of life, the average weight of kids at the last weighing before death was 3200 g. The highest number of deaths (50%) was caused by malnutrition, the least was in the instance of female goats, and only 50% of hermaphrodites survived 56 days of age. Therefore, mortality is currently the only readily available indicator of health and welfare for dairy goat farmers in the Slovakia.

Keywords: goats, mortality, The White Shorthaired goat, Brown Shorthaired goat

INTRODUCTION

Goats have been raised throughout Slovakia for centuries particularly by smallholder farmers. Goats were farmed mostly for milk and, secondarily, for meat. Smallholder farmers chose this species because maintenance is cheaper than cows and it is characterized, among other things, by early sexual maturation, modest feed requirements and high resistance to harsh environmental conditions. The dairy goat industry is constantly expanding, and the global goat herd has risen exponentially during the last decade compared to sheep and cattle. The importance of dairy goats has increased in the last decades because of a higher demand for dairy goat products for human consumption. Goats play an important role in the rural economy of developing countries, especially in areas with unfavorable environmental and climatic conditions, because of their capacities for adaptation to different environmental conditions and because they are important users of marginal and rural lands. In these contexts, goat dairy products often gain niche markets reaching higher prices than other dairy products. Furthermore, goat milk has some distinctive traits, such as high digestibility and low allergenicity, which lead it to be considered an alternative to bovine milk, especially for people with allergies and other gastrointestinal disorders (El-Agamy, 2007; Park et al., 2007). Effective management of farm animal resources requires comprehensive knowledge of the breeds' characteristics, including data on population size and structure, geographical distribution, production

environment, and within- and between-breed genetic diversity (Groeneveld et al., 2010; Makovicky et al., 2020). The main objective of the work was to determine the causes of mortality in weaned kids.

MATERIAL AND METHODS

Weighings were done at birth and at 7, 14, 21, 28, 35, 42, 49 and 56 days of age, and any deaths and their presumed cause were recorded on the day of weighing.

For mortality indicators, we analyzed:

- weight at the last weighing before death
- age at the last weighing before death
- presumed cause of death

In total, we evaluated mortality indicators in 68 kids. For mortality indicators, we assessed the average age and weight at the last weighing before death and the percentage representation of the causes of deaths of the kids. At the same time, we evaluated the influence of several non-genetic factors (litter size, lactation order, sex and control year) on mortality. To analyze the primary data, we used a linear model with fixed effects. In the calculations, we used the GLM procedure of the mathematical and statistical package SAS ver. 8.2. The significance of the differences was assessed using the Scheffé test: $P > 0.05$ – statistically insignificant (ns), $P 0.05 - 0.01$ statistically significant (+), $P 0.01 - 0.001$ statistically highly significant (++), $P < 0.001$ – statistically very highly significant (+++).

RESULTS AND DISCUSSION

During the 8 weeks of measurements, we recorded the deaths of 12 kids, one of which died immediately after birth and its weight was not used in the analysis of weights or average daily gains. Out of 68 kids, these deaths represent 17.6%, which is a relatively high number, but we did not proceed with supplementary feeding for kids that achieved worse gains or stagnated in weight, in order to avoid distorting the research results. If the kid was healthy, but the mother's milk production was insufficient, or the kid was oppressed by its siblings, we tried to ensure an equal intake of milk for both kids in order to equalize their chances of survival. As we can see from Table 1, most deaths (50%) were caused by malnutrition, or related problems such as hypoglycemia and hypothermia. Some goats that raise an only child without any problems in one year will not be able to raise either of them when twins are born the following year, as these kids compete for food and with poorer welfare, the risk of contracting infectious diseases, hypothermia, diarrheal diseases and other illnesses increases. The second most common cause of death was maternal lying down. In some cases, lying down can occur accidentally, but the mother of triplets from our measurements, despite her high milk production, refused to allow the kids to suckle for a certain time, which apparently often bothered her; when trying to suckle, she lay down regardless of whether the kid was under her. In this way, she killed the largest kid in the litter, the remaining two were allowed to suckle with her for the rest of the breeding season only under supervision. The goat repeated this behavior the follo-

wing year, when she had only twins, which was the reason for her removal from breeding after the end of lactation. The most deaths (3) were recorded in the 4th week of life, when the kids had a high need for milk and were not yet able to compensate for its deficiency with plant food. Two deaths were in the first, second and fifth weeks of life, during this period the kids were almost exclusively dependent on their mother. In the sixth and seventh weeks, not a single kid died, since at this age the kids can already meet their needs with plant food. The average weight at death was 3200 g. Our results show that the sex of the kid also has an impact on mortality. We recorded the largest number of deaths (7 pcs) in male goats, in female goats, which were included in the analysis the most, there were 3 pcs, in hermaphrodites 2 pcs. However, the percentage of deaths was significantly higher in hermaphrodites, when 2 out of 4 observed hermaphrodites died during the measurements, which represents 50%. This is probably due to hidden associated health problems that result from this genetic anomaly. It is possible that we did not even record all hermaphrodites, since in some the genitals of the opposite sex may be located in the pelvic cavity, without visible external manifestations. Such hermaphrodites will manifest themselves only later with different sexual behavior than is common in a given sex and infertility. For dairy goat herds, no scientific research has been published on kid mortality, and in the limited number of publications kid mortality percentages varied between 7 % and 32 %. Nevertheless, these studies are difficult to compare given the differences in herd size and additional circumstances.

Table 1: Causes of mortality of kids during the monitored period

Causes	Sex			Alltogether
	Males	Females	Hermatophrodist	
Birth consequences	1	-	1	1
Malnutrition	3	3	-	6
Maternal overpression	2	-	-	2
Undertempered	1	-	1	2
Alltogether	7	3	2	

CONCLUSION

The kid mortality rate was influenced by both animal- and environment-related factors, which concurs with previous studies. Management practices aimed at improving the health and survival of goats need to focus on countering unfavourable factors.

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Abstrakt

Chov kôz má na Slovensku dlhodobú tradíciu a históriu. Čo sa týka ukazovateľov mortality kozliat u plemien Biela koza krátkosrstá a Hnedá koza krátkosrstá, skúmali sme najčastejšie príčiny úmrtia kozliat do veku 56 dní. Zistili sme, že od narodenia do odstavu bola mortalita na úrovni 17,6 %. Ďalej sme zistili, že 50 % úmrtí bolo spôsobených podvýživou, a s tým súvisiacimi problémami – hypotermiou, hypoglykémiou. Najviac úmrtí sme zaznamenali v 4. týždni života, priemerná hmotnosť kozliat pri poslednom vážení pred úmrtím bola 3200 g. Najvyšší počet úhynov (50 %) bol spôsobený podvýživou, najmenej úhynov bolo u kozičiek, z hermafroditov sa veku 56 dní dožilo len 50 % jedincov. Mortalita kozliat je preto v súčasnosti jedným z najľahšie dostupných ukazovateľov zdravia a welfare chovateľov kôz na Slovensku.

Kľúčová slova: kozy, úmrtnosť, Biela koza krátkosrstá, Hnedá koza krátkosrstá

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