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SYNTHESIS STUDY OF THE QUALITY OF THE COLOSTRUM IN ȚURCANĂ BREED

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Abstract: *During the calving period of the 2025 season, seven farmers in the mountain area of Banat agreed to participate in the active management of the colostrum after a period of training and discussions. Five of these farmers gathered data on 125 sheep, including age, race, body condition score, number of lambs born live and dead, state of the udder, and colour of the colostrum. The results were analysed using a Brix Refractometer, which showed between 26.5% and 76% of the samples exceeded this minimum level value of the colostrum, i.e., it was of good quality. An average of 20 sheep colostrum samples showed a great variation at the level of the herd due to the feed. The forage front, especially concentrates (raw protein) and the supplementation of concentrates to the sheep with twin gestation were all factors that impacted the level of colostrum quality. Individual factors did not play a role in determining the quality of the colostrum; the quality of the colostrum was inadequate more likely if the sheep had an inadequate body condition score.*

• Introduction

As the sheep breeders in Mountainous Banat understood the role and significance of the colostrum following discussions within SCDCOC Caransebeș, they prepared for the 2025 calving season by optimizing and managing the colostrum to reduce the treatments applied to the newly-born lambs and after that. This case study shows how the sheep breeders can be motivated to measure the quality of the colostrum to determine optimal colostrum antibodies for each individual lamb. The perinatal mortality of the lambs is a significant problem regarding the animals and economic welfare of sheep farms around the world. It has been reported that it has remained stable at 15-20% in the last four decades.

In a study carried out in the United Kingdom, a global risk of mortality of 7% in 108 sheep farms (with an interval of 3.3-8.3%), with most mortality in the first week of life was reported. Mortality was associated with an increased risk as a result of a neonatal septicaemia, as a result of inadequate colostrum, starvation, and the death caused by the exposure hypothermia. The transfer of the antibodies from the colostrum to the lamb is vital because of the inability of the placenta of the epithelia-chorial type to transfer maternal antibodies during the uterine period. The level of IgG in the lamb's blood is directly linked to the contribution and quality of the ingested colostrum.

• Material and method

The participants were asked to collect a colostrum sample from the sheep who delivered in the morning, within six hours of calving from the sheep with both single and twin calving. A Brix refractometer was used for testing. The colour of the colostrum (a range of colours from white to yellow) and the ease of interpreting the colostrum (good, medium, or weak) were recorded alongside the identification of the sheep – number, age, bodily condition score and a description of the udder. The lambs' living environment was inside (shelter). The breeders also completed a questionnaire, referring to sheep nutrition in the last six weeks of gestation. The data was entered and analysed in Microsoft Excel (Microsoft Corporation, 2018).

For the statistical analysis, a multi-level logistics regression model was used to evaluate the association between the quality of the colostrum (below, above, and equal to 26.5%) and a number of explanatory variables. The explanatory variables tested were the calving month, the age of the sheep, the bodily condition score, the number of the calving, the number of the lambs born live, and the size of the udder.

• Results and discussion

One hundred and twenty-five samples from the five herds were analysed, which represented 71% of the farms registered in the study. The average number of samples per farm was 25. Four breeders provided details about the size of the herd, which ranged from 60 to 220 lambs. The percentage of primiparous sheep was 23%. Most of the calving took place in February and March.

In this study, it was decided to use the Brix limit of ≥ 26.5%, as suggested by Kessler, because this is the optimal value based on research so far and on the authors, which have determined optimal Brix limit for colostrum samples with a recommended immunoglobulin concentration of 20 mg/ml immunoglobulins colostrum concentration. In this study, quality colostrum had a Brix value of ≥ 26.5% (sensitivity 76.3%, specificity 87%, positive predictive value 95.1%, negative predictive value 52.6%).

There were 125 samples analysed, of which 118 (98.8%) could be accepted, and 74.8% had, when reading with a Brix refractometer, ≥ 26.5%. There were only two herds in which all the samples were ≥ 26.5%, one had values with an average percentage of the examined samples and two had less than 50% of the classified samples.

The descriptions about the size of the udder determined by palpation were recorded in 90 sheep, of which 70 of the udders were average or normal. Only 20 sheep had non-compliant udders. As for the size of the udder, in 20 sheep they were described as small, in the rest of the sheep (70) as large. The degree of udder filling was not often used as a comparison element and only 55 sheep were described as full udder, 15 sheep as empty udder, and 20 sheep with flap udder. A variety of colours of the colostrum was described, but most was yellow (60) or cream (30).

• Conclusions

This study showed that 76 of the samples were considered good quality, using a 26.5% Brix refractometer. The main factors for determining the quality of the colostrum have proven to be at the level of the number of sheep, with feeding before the calving playing an important potential role. Additional impact of the access to concentrates and feed front has a potential role in determining the quality of the colostrum and still requires research. The study also highlighted the ease with which farmers can monitor the quality of the colostrum in their herds to improve the health and performance of the newly born lambs.