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Assessment of the Impact of the Blue Tongue Disease on Milk Production

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Abstract:

Milk production is the most significant indicator of the impact of diseases in general and that of the blue tongue in particular. In this paper, based on the questionnaires distributed in most of the country's counties, the morbidity was determined and the impact of the disease was investigated, in reducing the amount of milk produced from sheep and cows involved in the study. Subsequently, the conversion of losses into monetary values (local currency ALL), concretizes the financial loss that results from the disease and evidences its size.

Key words: questionnaires, morbidity, milk production, economic impact

INTRODUCTION

Each disease acts as a negative input and disrupts the animal's efficiency, bringing forth economic consequences (Thrusfield M. 2007). Therefore, the blue tongue disease has a significant economic impact, due to direct and indirect losses, where milk production is included in the first one (Otte M.J. et al, 2001). A global impact assessment yields $ 3 billion, while indirect

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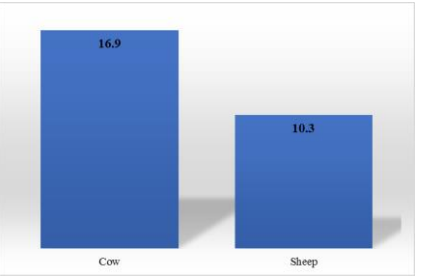
annual costs account for $ 125 million (J. Rushton et al, 2015). The total annual cost of this infection in California was $ 5.75 million (350,000 were infected) and Mississippi $ 6 million (Rushton J. 2009). The present study focuses only on the impact of the disease on milk production and on its economic assessment. This production involves the main course of breeding and is more susceptible to pathologies affecting domestic ruminants. Therefore, it is of primary importance to assess the economic losses of the impact of blue tongue disease on the reduction of milk production.

MATERIAL AND METHOD

The study on the impact of the outbreak of bluetongue on milk production in 2014 includes a total of 342 farms, out of which 279 are family farms and 63 commercials, distributed in 9 districts of the country (Berat, Debar, Elbasan, Fier, Gjirokastra, Korça, Kukës, Lezha and Shkodra). The number of ruminants of these farms is 27315 in total, out of which 26502 are sheep and 813 cows. From a methodological point of view, the study is based on the collection of the information needed by the farmers quoted above, through questionnaires compiled according to a standard form, with special sections dedicated to the economic, social and animal welfare impact. The questionnaire information is systematized, processed and graphed, providing a complete and specific overview of each column. This paper deals with the impact of the disease on milk production alone, whose indicators are averaged at the country level (9 counties), to gain a more comprehensive and general picture of the impact of this disease on reducing production and its economic assessment.

RESULTS AND DISCUSSION

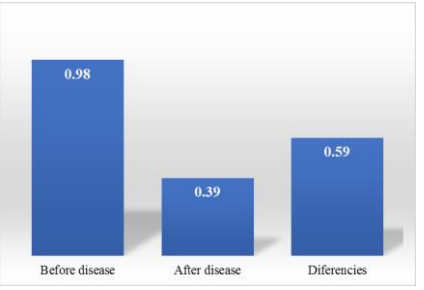
The graph no. 1 shows the vulnerability or morbidity of animals from blue tongue disease, which results in 16.9% for sheep and 10.3% for cows. Literature sources highlight a significant number of variations in this regard. A morbidity of 1.85% (Meiswinkel, R., et al., 2008) and up to 50-70% is reported in the sheep (Otto M. Radostits, et al. 2007), while the outbreak in caw is lower. It is reported on the average 1-2%, but in special cases it reaches up to 26% (USDA, 2016). As we can see, our figures are within the limits cited by literature, though in sheep they appear relatively lower. Moreover, our result is approximated to that of a study on serological screening of blue tongue in our country, which reports a lower average prevalence level of 18.9% (Di Ventura M, et al 2004).



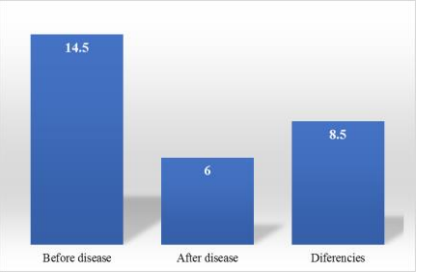
Graph No 1 – Morbidity of blue tongue disease in sheep and cow

The results of the impact of the blue tongue disease on milk production, which are presented graphically separately for sheep and cows, respectively in graph no. 2 and that no. 3 raise great interest. As the effect of the disease, sheep's milk production averaged 39.7% (on average 0.98 liters / head / day before the disease, 0.39 liters after it, with a difference of 0.59 liters) Something more results in this decrease in cows and specifically 41.3% (from 14.5 liters / head / a day before the disease, to 6 liters after it, with 8.5 liter difference). Decrease of milk production to about 40%, shows that blue tongue disease

significantly affects this important livestock indicator for our farmers, significantly harming it.



Graph Nr. 2 - Influence of blue tongue disease in sheep's milk production (liters / day).



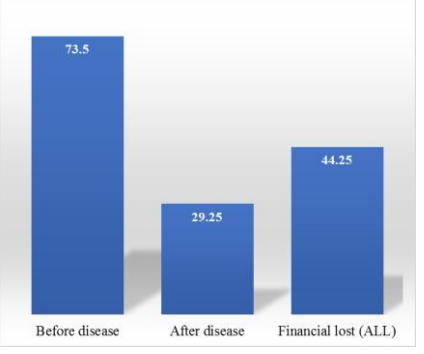
Graph Nr. 3 - Influence of blue tongue disease in cow's milk production (liters / day)

This impact of the disease on milk production is economically very sensitive, even compared to the literature sources, our result is significantly higher. In this regards, literature cites figures ranging from more than 3% to the herd level (Nusinovici S., et al., 2013) to 5-20% (Rushton J. et al, 2015). In fact, our study only addresses clinically affected animals, while there are other interesting studies that show a reduction in production of the heads without clinical manifestations, almost to the same level as those clinically affected. This ratio is 51 by 52 liters (Santman-Berends I.M. et al, 2011).

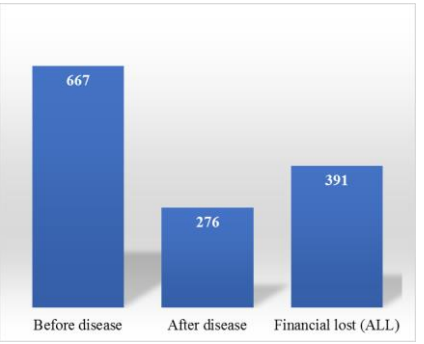
The graph 4 and he graph 5 serve to further concretize this economic damage as a result of the disease's impact on the reduction of milk production, related to the economic losses

converted and already expressed in ALL value, respectively in sheep and cows. From the survey data it results that the average price of 1 liter of milk in sheep is 75 ALL, while in cattle 46 ALL. Based on these reference prices as well as the above data on the reduction of production, it results that: if the average daily yield of a sheep before the disease was estimated to 73.5 ALL, after the illness the profit is only 29.25 ALL, with a difference of 44.25 ALL. Likewise, calculations were made for cows, where the profit ranges from 667 ALL before the disease to only 276 ALL after it. In this way, the daily profit difference from the sale of milk in the lowest amount as the effect of the disease, for cows is 391 ALL. These differences, which express shortages of sheep's and cow's production, are in themselves financial losses easily calculated by the farmers, whether being families (naturally more sensitive), or commercial.

We point out that our analysis relates only to the lack of profit, as a result of the reduction of production for the effect of the disease and consequently the sale of smaller quantities of milk, without considering the quantity-price interactions estimated at 4% in the first year and gradually decreasing to 0 in the five years (Technical Report, 2008).



Graph Nr. 4 - Financial losses stemming from the impact of blue tongue disease on sheep's milk production (in Lek).



Graph Nr. 5 - Financial losses stemming from the impact of blue tongue disease on cow's milk production (in lek).

On this basis, referring to a study conducted in the Netherlands that finds the reduction of milk production as a result of the disease by 20% (Rushton J. et al., 2015), as well as average yields of 60 liters of sheep milk and 2670 liters of milk for cows (INSTAT, 2016), calculations show that for an average lactation of 5 months to 10 months in cows, there is a loss of production of 32 756 tonnes of milk in sheep and 69 248 tonnes in cows.

Converted to ALL value, the financial loss from the impact of blue tongue disease in dairy production for a lactation ranges to 2 456 735 ALL per sheep and 3 185 412 ALL per cow, or to 5 642 147 ALL in total.

Further deepening, by the proportion of the total quantity lost by the number of farmers, it results that each farmer loses on average 16 497 ALL during a lactation only as a result of the reduction of milk production for the effect of blue tongue disease. Undoubtedly, this is a significant figure that heavily weighs on the Albanian farmer's budget.

CONCLUSIONS

1. The morbidity of bluetongue outbreak in 2014 is comparable, 16.9% in sheep and 10.3% in cows.

2. As the effect of the disease, milk production averages an average daily reduction of about 40% (39.7% in sheep and 41.3% in cows).
3. The daily profit from the sale of milk decreases by 44.25 ALL per sheep and 391 ALL per cow.
4. During an average lactation of 5 months in sheep and 10 months in cows, there is a loss of production approximately of 32 756 and 69 248 tonnes of milk in sheep and cattle. These amounts of milk are converted into 5,642,147 ALL in total, divided in 2 456 735 ALL per sheep and 3 185 412 ALL per cows.

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