

RESEARCH ARTICLE

(Open Access)

Some aspects of economic impact of bluetongue disease in Dibra regionELVANA ZHEZHA¹, RUZHDI KEÇI^{1*}, HEKURAN HUNA², KLODIAN DEDOLLI²¹Faculty of Veterinary Medicine, Agricultural University of Tirana²Private Veterinarian at Dibra Region

*Corresponding author; E-mail:k_ruzhdi@yahoo.com

Abstract

Economic analyzes of animal disease and their impact on animal health and animal production recently is becoming more popular and a new research area. This study calculate general economic impact of bluetongue disease on Dibra region during 2014. The study involve broad economic analyzes of animal direct physically lost, drop milk production and other expenses related with possible farmers compensation for dead animals.

The aim of this study was assess calculation of economic lost from bluetongue disease by converting them in monetary value according above mention aspects.

Material and method: The methodology of this study is based on analyzing of data collected from dedicated questioners for this aim. The data on number of total animals according species are used official data of INSTAT. The data were analyzed with ToolPak Excel software.

Results: Economic lost were significant, the cost for only deatd cattle is 32000 Euro while daily drop milk production can be reduced up to 80%, converted in 4 Euro per day per animal, or more than 400 euro per day.

Keywords: Disease Outbreak, Bluetongue, Impact, Economics of Animal Health and Production.

1. Introduction

Bluetongue (BT), as a viral non-contiguous disease that is transmitted through mosquitoes *Culicoides* spp and affects the domestic and wild ruminants is recently spread in many countries of Europe and Balkan [3]. In Albania, during 2014 an epizootic spread of this sickness occurred with considerable impact especially economic one. Not having the sickness itself on the focus of our study, we have analyzed only its economic aspect considering its impact in three main points of view regarding the economic loss and damage; respectively milk production expenses for medical treatment and recovery of reproduction functions, as well as delays in estrus and effective cow mating. The conversion of the obtained data into monetary value highlights the economic aspects of the sickness.

2. Material and Methods

The material presented is part of an integral study on the economic and social impact on the

wellbeing of animals affected by the Bluetongue sickness in 2014. It based to the cattle into disposal in Dibra region which got sick by BT in the epizooty of 2014. The animals of these farmers have generally been older than 2 years and in different lactation periods. From the methodic point of view the study is based on the information collected through questionnaires described and approved in the study methodology which were filled in by the farmers and contain wider information incorporated in specific sections. In this case, only the data of the section of economic impact of the BT sickness are utilized, excluding the damage that stems from death, slaughtering and compensation of animals with fatal ending.

The estimation of the economic impact is based on three main directions; in the loses of milk productivity as a consequence of the sickness, in the expenses for medical expenses for the recovery of reproduction functions and time delays of estrus and effective mating. All losses are approximated per animal or cattle unit(daily production, Albanian Lek,

etc.), which are converted as financial loss in ALL value. In addition to direct losses, the indirect losses that derive from the sickness' effects are as well calculated.

3. Results and Discussion

In regard to the milk production, from the processing of questionnaires results that there is a substantial reduction of 9.4 liters/animals in the average daily production of the milk in the effected animals in the period before it appeared. This difference of daily production is clearly displayed in the graphic 1. For every month, this loss in milk production reaches to 2.8 l.

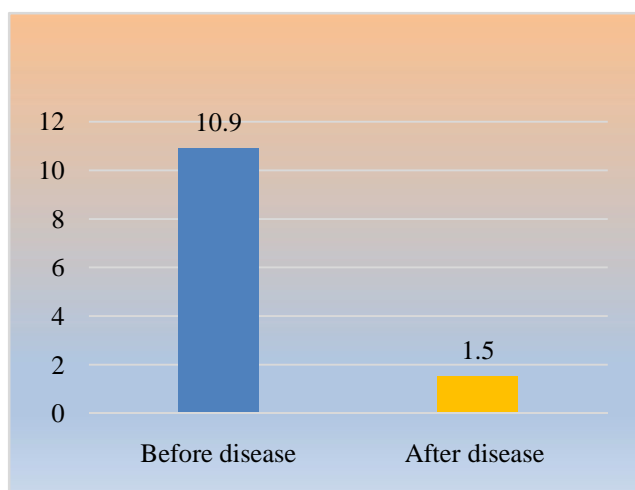


Figure 1 –Milk production before and after the sickness

Converting this situation into ALL, it results that from the incomes of 545 ALL/day from milk production before the sickness the figure of the incomes drops to 75 ALL/day after it.

The difference of 470 ALL/day causes for every farmer a monthly financial loss of 14.100 ALL, almost at the same value if the monthly loss of production is converted. The calculations are done based on the price of 50 ALL/liter. The graphic representation of this difference in incomes follows in graphic 2.

Proceeding with the economic impact of the sickness, by the processing of questionnaires data regarding the additional expenses for medical treatment, veterinary feesm synchronization of irregular estruses and effective mating, it results that

the average economic loss reaches a total of 15.766 ALL per animal.

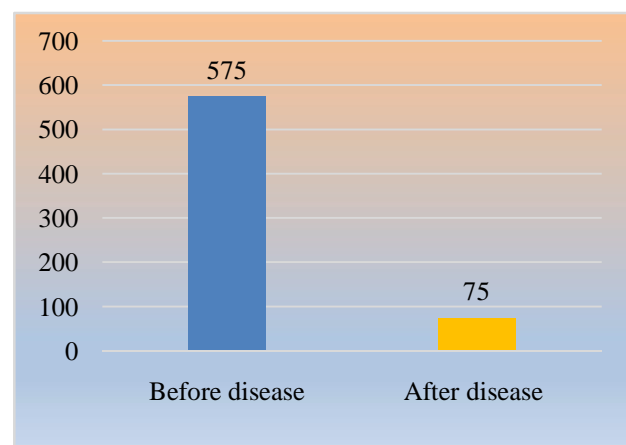


Figure 2 –The incomes in ALL from the milk production before and after the sickness

This financial loss represents the sum of the expenses respectively for the medical treatment (approximately 11.400 ALL/animal), for the payment of veterinary service fees (approximately 3.366 ALL/animal), as well as for the synchronization of the estrus and effective mating (approximately 1.000 ALL/animal). These findings are represented in graphic 3.

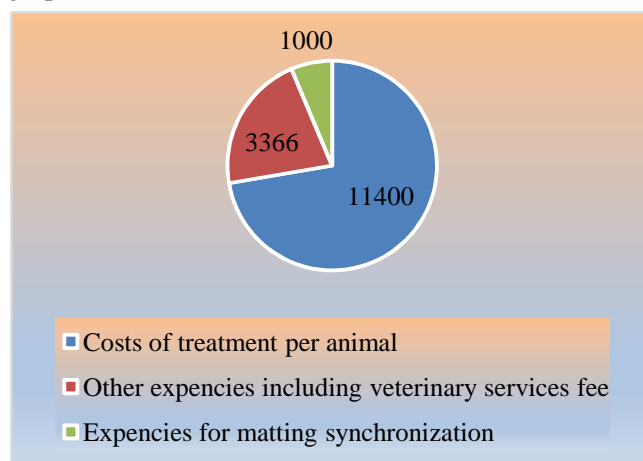


Figure 3 –The financial losses by the medical treatment, veterinary service and mating synchronization

The economic losses deep further if we take into consideration several reproduction disorders due to the sickness, particularly the delayed estrus and effective mating. In this regard, there results a delay

of approximately 9.2 weeks in the estrus of sick animals, and approximately 2.8 lost mating until the effective mating of these animals. This index influences also the economic loss from BT disease. Therefore, due to the lost effective mating approximately a 2-month missed pregnancy results for every cow. Converted further, only in our cases (48 animals), about 10.6 calves/year are lost or missed, not including here about 3000 ALL/farmer losses from the mating fees, incomes missing from the eventual sale of milk, meat, etc.

The impact of BT on the milk production is very obvious and sensitive issue ascertained as such also by foreign scholars. The reduction of milk production is dramatic when the disease appears in the animals or naïve farms [2], but it is observed also in the animals that are exposed to it but without clinical signs approximately 2.3 liters/animal in a day[4]. Our finding of a drastic reduction by about 86% in the milk production by BT disease shows not only the serious damage of the production, but also reflects clearly the monetary loss by 470 ALL per day or 14.100 ALL per month respectively. This is considerable sum that cannot be ignored in the economy of a family. Moreover, in volume and economic importance terms, the index of this economic loss is ranked in the first place in spite of the fact that the group of medical treatment, service fees and mating synchronization mark collectively the highest figure of financial loss. Similar costs are reported also by international studies. Thus, the reduction in milk production due to BT in Switzerland had a cost of about 980 thousand Swiss francs [1]. On the other hand, due to the sickness in Turkey and Mississippi are reported losses of about 10.5 million liras and 6 million USD respectively in a year [3].

As stated above, the other aspect of the observed economic impact of BT disease is the medical treatment, veterinary service and mating synchronization which reaches approximately to the total amount of 15.766 ALL/animal. About 70% of this amount is comprised of the average medical

treatment cost and only 6% of the mating synchronization. If referring to the literature, the cost of the synchronization of one estrus is almost the same (9 €), whereas the cost of medical treatment is higher, varying from 90 to 165 €[5]. However, in the conditions of Albanian farmers, it is a huge economic loss.

The results after the delays in estruses and effective mating of animals suffering from BT display further economic loss, Although, this loss is not felt directly in the economy of a family, if it is analyzed into details, such loss is a big one. When calculated, it accounts also the missing incomes stemming from the animal mating not realized on time and missing of offspring. Moreover, the loss increases if we take into consideration also the indirect loss, which is not little, including the reduction of milk collection prices due to the increase of somatic cells due to the disease etc. [4]. Undoubtedly, these aspects will remain the future subject of our study.

4. Conclusions

The same as it is highlighted by foreign scholars, the BT disease has a great economic impact to the cattle farmers, mainly because of direct economic loss. Due to the disease, the milk production is reduced substantially, and it causes larger financial losses in a family farm in Albania (14.100 ALL/month). Along with the expenses of the medical treatment of the disease (the amount of 11.400 ALL), they consist in the largest economic loss from the BT disease. In addition, although not completely estimated, the losses due to the delayed effective mating, are also considerable.

5. References

1. Häslér B., Howe K.S., Di Labio E., Schwermer H. & Stärk K.D.C: **Economic evaluation of the surveillance and intervention programme for bluetongue virus serotype 8 in Switzerland.** Preventive Veterinary Medicine Journal 2012, **103**: 93-111

2. Nusinovici S., Seegers H., Joly A., Beaudeau F. & Fourichon C: **Increase in the occurrence of abortions associated with exposure to the Bluetongue virus serotype 8 in naïve dairy herds.** Theriogenology 2012, **78**: 1140-1151.
3. Rushton J: **The main Livestock Diseases.** In: The economics of animal health & production; 2011: 220-221
4. Santman-Berends I.M., Hage J.J., Lam T.J., Sampimon O.C. & van Schaik G: **The effect of bluetongue virus serotype 8 on milk production and somatic cell count in Dutch dairy cows in 2008.** J Dairy Sci, 2010, **94**: 1347-1354.
5. Velthuis A.G.J., Saatkamp H.W., Mourits M.C.M., de Koeijer A.A. & Elbers A.R.W. 2010. **Financial consequences of the Dutch bluetongue serotype 8 epidemics of 2006 and 2007.** Preventive Veterinary Medicine Journal 2010, **93**, 294-304.