CHARACTERIZATION OF THE LUMPY SKIN DISEASE OUTBREAK IN MACEDONIA IN 2016

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Objective

The aim of this experimental final degree project was to describe the outbreak of Lumpy Skin Disease (LSD) in Macedonia in 2016.

Introduction

Lumpy skin disease (LSD) is a vector-born disease of domestic cattle and Asian water buffalo (*Bubalus bubalis*) caused by the lumpy skin disease virus.

The main clinical sign of LSD is the appearance of nodular lesions with a diameter of 10 to 55 mm on the skin of head, neck, perineum, genitalia, udder and limbs.

Figure 1. LSD affected cattle. ©Mark Ruder

The World Organization for Animal Health (OIE) categorizes LSD as a notifiable disease because of the substantial economic impact and its potential for rapid spread.

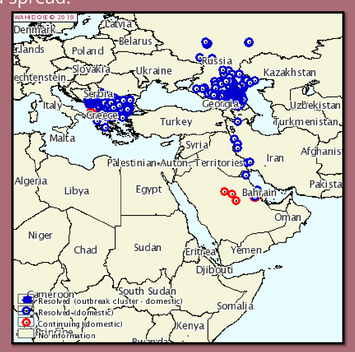

Figure2. LSD outbreaks in 2016. OIE WAHIS

LSD has been a widespread and endemic disease in Africa. In 2013, LSD spread into multiple countries of the Middle East and Turkey. In the following years outbreaks of the disease were reported in Azerbaijan and Cyprus in 2014 and Greece, Armenia and Kazakhstan in 2015. Finally, in 2016, the disease spread to Balkan countries. 216 herds were affected in Bulgaria and 3568 Albania.

Results

Epidemic curve

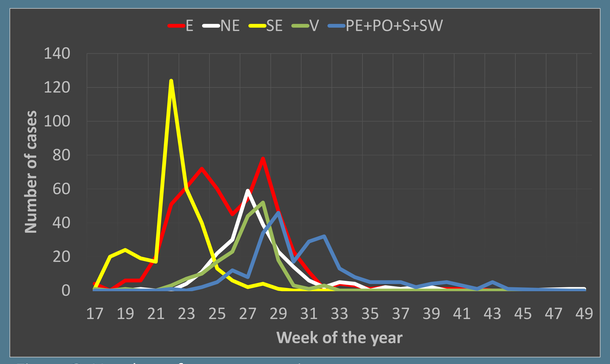

Figure 3. Number of cases per region.

- ✓ 1535 outbreaks from 22nd of April to 7th of December of 2016.
- ✓ Erradication based on partial stamping out, control of movements and vaccination.
- ✓ Regions reported cases in different time periods and with different intensity.
- ✓ Eastern regions showed more cases and were affected earlier.
- ✓ Western provinces showed less cases and were affected in July-August.

Mortality and morbidity

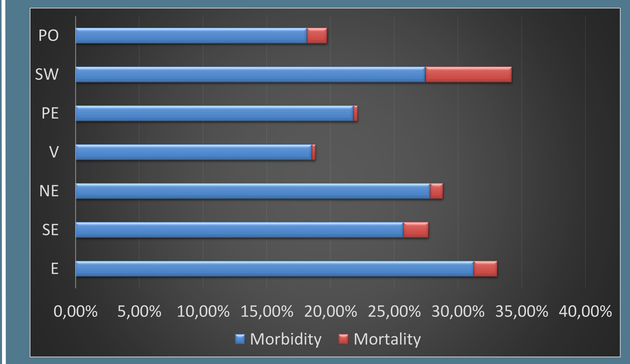

Figure 5. Morbidity and mortality calculated per region.

- ✓ The mean morbidity and mortality were 24.74% and 1.88% respectively.
- ✓ The morbidity corresponds to the 3925 culled animals during the partial stamping out.
- ✓ Low figures were reported by regions hit last by the outbreak and with less small farms.
- ✓ High figures were reported by regions hit first by the outbreak.
- ✓ High mortality and morbidity in SW possibly due to high percentage of small, traditional farms.

Vaccination curve

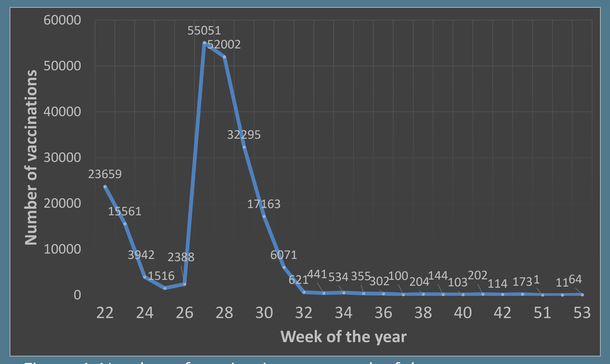

Figure 4. Number of vaccinations per week of the year.

- ✓ Vaccination was implemented in 2 phases.

1st phase	2nd phase
• 24th of May to 14th of June • 46,130 animals • Implemented in eastern regions.	• 26th of June to 31st of July • 165,783 animals • Implemented in all the regions.

- ✓ 3,033 animals were vaccinated after 31st July (calves, imported animals, and cows that have not been immunised before) (Tabakovsky et al. 2017).

Vaccine efficacy

Immunity status of the case	Count	Percentage
Susceptible	*354*	24.55%
Partially immunized	*938*	65.05%
Immunized	*150*	10.40%

Susceptible	Non vaccinated cases
Partially immunized	Cases reported 0-21 days after vaccination
Immunized	Cases reported 21 days after vaccination

Table 1. Description of outbreak cases in relation to their date of vaccination.

✓75 % of all cases were reported at least 1 day after vaccination

- Possible reporting artifact? An important number of cases were reported by vets that participated in the vaccination campaign.

✓10% of reported cases were reported after animals should have been immune.

- Low quality vaccine;
- Vaccination not implemented;
- Lower vaccine dose applied;
- Vaccine not properly stored and/or managed (Hovari and Beltrán-Alcrudo 2018)

Conclusion

- ✓ The outbreak of LSD that affected North Macedonia in 2016 moved from the east to the west and from south to north.
- ✓ The regions were affected with different magnitude, in part due to how early the disease affected the regions and, in part, due to the moment in which the vaccination campaign was implemented.
- ✓ What managed to put the country's outbreak to an end was the vaccination campaign implemented on a country-wide scale.

References

- ✓ Tabakovsky B, Krstevski K, Eshterovikj S. 2017. Experience of the veterinary service of the former Yugoslav Republic of Macedonia with the occurrence of Lumpy Skin Disease in 2016. Empres Heal.(47).
- ✓ Tuppurainen E, Alexandrov T, Beltrán-Alcrudo D. 2017. LUMPY SKIN DISEASE A field manual for veterinarians. Rome.
- ✓ Tuppurainen ESM, Oura CAL. 2012. Review: Lumpy Skin Disease: An Emerging Threat to Europe, the Middle East and Asia. Transbound Emerg Dis. 59(1):40–48. doi:10.1111/j.1865-1682.2011.01242.x.
- ✓ Hovari M, Beltrán-Alcrudo D. 2018. Lumpy Skin Disease Contingency Plan Template. Appendix II. Guide to develop a lumpy skin disease emergency vaccination plan.