

Analysis of the risk, consequences, compliance, and motivation of farmers to vaccinate against Brucellosis, Lumpy skin disease, Rabies, Bovine ephemeral fever, and Botulism

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Abstract

The cattle industry in Israel is at risk from various diseases, which may result in substantial economic losses. Although effective and safe vaccines are available for many of these diseases, dairy farmers often choose not to vaccinate their herds, which can lead to the emergence of outbreaks. These outbreaks are associated with significant economic costs to the industry. The determination of whether to administer vaccination for a particular disease is contingent upon a multitude of factors. These factors comprise the severity and impact of the disease, the efficacy of the vaccine, and the likelihood of disease occurrence. With respect to these factors, the scientific literature provides some insight, while there remains substantial undisclosed information yet to be discovered.

The aim of this study is to examine the frequency and severity of adverse events associated with the use of the Neethling vaccine against Lumpy skin disease in dairy cows. Additionally, we will evaluate the costs due to the disease in situations where vaccination is not implemented at both the individual cow and herd levels. Furthermore, we will investigate the Israeli dairy farmers' compliance dynamics of vaccination against Lumpy skin disease. Finally, we will compare the determinants that influence the decision of dairy farmers to vaccinate or not, against diseases such as Rabies, Brucellosis, Botulism, Bovine ephemeral fever, and Lumpy skin disease.

The results of the first part of the study indicate that the administration of the Neethling vaccine does not impact milk production or exit rate from the herd within the first 30 days post-vaccination. Thus, we have demonstrated that implementing the Neethling vaccine is critical for preventing the emergence and spread of Lumpy skin disease. For the second part of the study, which refers to the analysis of the costs of the disease's damages, all the data was collected and will be analyzed during the current year.

The investigation on the compliance dynamics of dairy farmers towards vaccination against Lumpy skin disease indicates a gradual decline in the willingness to vaccinate, following the shift to a voluntary vaccination policy three years after the 2012-2013 outbreak. This decline is linked to reduced social pressure from both government and private veterinary bodies. A comparative analysis of the factors influencing the intention of dairy farmers to vaccinate against five diseases reveals that social norms play a crucial role in the decision-making process for Lumpy skin disease, Brucellosis, Rabies, and Bovine ephemeral fever. Furthermore, different organizations/people have varying degrees of influence on dairy farmers' vaccination intentions for each disease. In conclusion, vaccination policies should be tailored to the disease's unique characteristics that impact dairy farmers' decision-making on herd vaccination.