Medicina Veterinária

SPATIAL TEMPORAL ANALYSIS OF BRUCELOSIS VACCINATION RATE IN MINAS GERAIS, BRAZIL, FROM 2011 TO 2018.

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Resumo

To decrease the huge impact on the cattle industry caused by brucellosis, the Ministério de Agricultura e Pecuária (MAPA) created the Programa Nacional de Controle e Erradicação de Brucelose e Tuberculose (PNCEBT), that established the vaccination of all female bovines between 3 to 8 months of age against the disease. In order to analyze the effectiveness of PNCEBT in Minas Gerais, was performed a spatial temporal analysis on vaccination data of brucellosis in bovines, from 2011 to 2018 acquired from Instituto Mineiro de Agropecuária (IMA). We calculated the vaccination rate dividing the total number of female bovines vaccinated per the total number of female bovine population in vaccination age, and then we plotted the vaccination rate distribution according to the municipalities. It was performed Spatial Autocorrelation test (Moran's I test) and Local Spatial Autocorrelation Analysis (LISA) to identify the presence of clusters in the vaccination rate data. The results showed an increase along the years in vaccination rate in the municipalities of Minas Gerais, being in 2011 41% and in 2018 73%. The highest vaccination rate was in 2018 in Mata region with 99.65% while the lowest was in 2017 in the Central region with 3.23%. The Moran's I Test, showed a significate autocorrelation in all the analyzed years, with a low (under 0.3) autocorrelation in 2015 [0.281 (p-value:0.000)], 2016 [(0.206 (p-value:0.0000)], 2017 [0.230 (p-value:0.0000)] and 2018 [0.153 (p-value:0.0000)], whereas in the other years, 2011 [0.454 (p-value:0.0000)], 2012 [0.488 (p-value:0.0000)], 2013 [0.468 (p-value:0.0000)], 2014 [0.544(p-value:0.0000)], the autocorrelation results were medium (between 0.3 and 0.7). The LISA test results demonstrated the formation of clusters between locations with a high vaccination rate in North region in 2011 to 2013, 2015, 2016 and 2018, in Jequitinhonha/Mucuri regions in the years 2011 to 2014, 2016 and 2018, Mata region in 2013 to 2018, South region only in 2011, Northeast in 2015, and Central, Middle west, Triângulo and Rio Doce regions showed clusters in all years. However, in Alto Paranaíba region did not show a high-high cluster in any year analyzed. Our results demonstrated that, along the years, the vaccination rate increased, contributing to the implementation of PNCEBT and the control of brucellosis in Minas Gerais, even though the vaccination rate and formation of clusters do not demonstrate a pattern of distribution between 2011 and 2018.

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Sessão: 5
Número pôster: 109   *novembro de 2023*
Identificador deste resumo: 3296-17-2265