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ABSTRACT BOOK

USE OF GEOGRAPHICAL AND SOCIO-ECONOMICAL INFORMATION TO SUPPORT THE RISK ASSESSMENT OF FOOT AND MOUTH DISEASE IN THE FRONTIER BETWEEN BRAZIL AND PARAGUAY

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In 2001, Brazil was able to eliminate the outbreaks of Foot and Mouth Disease (FMD) in bovine herds. After that, meat exports had an increase of 200%. However, in September 2005 occurred a FMD outbreak in the State of Mato Grosso do Sul (MS) and Paraná, and then, not only them, but also other states, lost the status of the «FMD free zone with vaccination» and they were forbidden to export meat to other countries. According to *Gazeta Mercantil Journal* (2005) the loss related to the return of the FMD disease in Mato Grosso do Sul, reached US$ 1.5 billion, due to commercial restriction of meat exportations. Only in July, 2008, after three years of the outbreak, Mato Grosso do Sul was considered free with vaccination by the World Organization for Animal Health (OIE). Because of the different production systems, socio-economical conditions and geographical characteristic over the State of Mato Grosso do Sul, which has one of the Brazilian's biggest bovine herd (20-million heads) working on FMD risk assessment of FMD involves to address the problematic with an holistic approach.

The aim of the Ph.D. project is to analyze the potential use of geographical informations as well as geospatial tools (maps, satellite images) and use with OTAG decisional support system to make risk assessment of FMD. Two experimental counties in the state of Mato Grosso do Sul in the frontier between Brazil and Paraguay considered by the Brazilian Government a high surveillance region for FMD disease were selected. Production practices and their specific geographical characteristics (land cover, land use, infrastructure, etc.) will be studied with the use of Landsat 5 satellite images and field survey. Socio-economical, sanitary and animal movements data for each county will be analysed. The research will also involve a temporal analysis, based on the evolution of the territories and human practices, the actual picture of these counties, regarding the 2005 FMD outbreak. All the parameters will be analyzed in order to develop a methodology to determine and improve decisional indicators that will have potential issue for FMD risk assessment.

Use of geographical and socio-economical information to support the risk assessment of foot and mouth disease in the frontier between Brazil and Paraguay

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Introduction

In 2001, Brazil was able to eliminate the outbreaks of Foot and Mouth Disease (FMD) in bovine herds. After that, meat exports had an increase of 200%. However, in September 2005 occurred a FMD outbreak in the State of Mato Grosso do Sul (MS) and Paraná, and then, not only them, but also other states, lost the status of the "FMD free zone with vaccination" and they were forbidden to export meat to other countries. According to Gazeta Mercantil Journal (2005) the loss related to the return of the FMD disease in Mato Grosso do Sul, reached US$ 1.5 billion, due to commercial restriction of meat exportations. Only in July, 2008, after three years of the outbreak, Mato Grosso do Sul was considered free with vaccination by the World Organization for Animal Health (OIE). Because of the different production systems, socio-economical conditions and geographical characteristic over the State of Mato Grosso do Sul, which has one of the Brazilian's biggest bovine herd (20-million heads) working on FMD risk assessment of FMD involves to address the problematic with an holistic approach.

Objectives

The aim of the Ph.D. project is to analyze the potential use of geographical information as well as geospatial tools (maps, satellite images) and use with OTAG decisional system to support risk assessment of FMD in the frontier of Brazil and Paraguay.

Methods

Two experimental counties in the state of Mato Grosso do Sul in the frontier between Brazil and Paraguay considered by the Brazilian Government a high surveillance region for FMD disease.

Production practices and their specific geographical characteristics (land cover, land use, infrastructure, etc.) will be studied with the use of Landsat 5 satellite images and field survey. Socio-economical, sanitary and animal movements data for each county will be analysed. The research will also involve a temporal analysis, based on the evolution of the territories and human practices, the actual picture of these counties, regarding the 2005 FMD outbreak. All the parameters will be analyzed in order to develop a methodology to determine and improve decisional indicators that will have potential issue for FMD risk assessment.

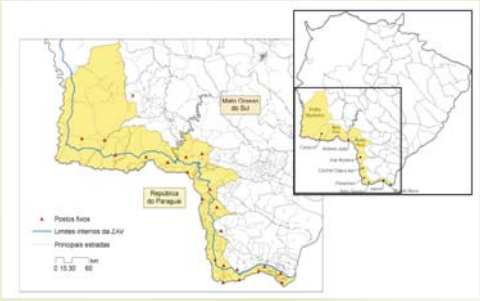

Fig. 1 Geographic representation of the High Surveillance Zone in the State of Mato Grosso do Sul, Brazil
Source : Brazilian Ministry of Agrciculture, Livestock and Food Supply, Brazil, 2008

Preliminary Results

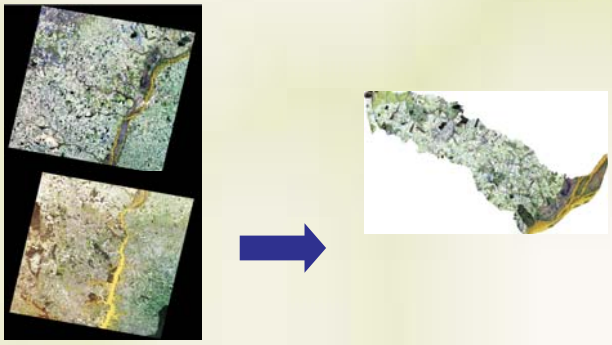

Fig. 2 Mosaic of Landsat 5TM Images from July 2008

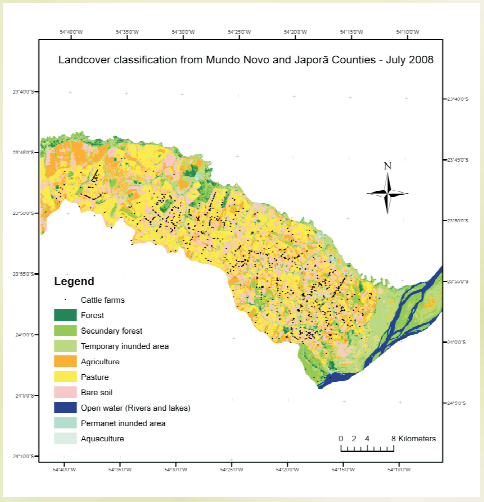

Fig. 3 Non supervised Isodata Classification

Unsupervised Isodata landcover classification from Mundo Novo and Japorã counties in Mato Grosso do Sul Estate was done. Nine classes were identified. According to this analysis, 26.000 ha (15% of the pixels) are related to the pasture class. Another 16% of the pixels were classified as temporary inundated area, 14% of agriculture and 25% of bare soils. The main classes of interest are pasture and inundated area, which are considered potential cattle farm areas. The land cover pattern will be one of the parameters that will be analyzed and will be combined with socio-economic and farms data in order to characterize production systems types.

Conclusion

By this means it will be possible to develop an operational and generic framework, based on the use of geographical as well as socio-economical information to support FMD risk assessment in the frontier between Brazil and Paraguay.

Ministério da Agricultura, Pecuária e Abastecimento

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