Towards an increasing awareness and use of remote sensing and geographical information systems in veterinary medicine in Nigeria

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Although Remote Sensing (RS) and Geographical Information Systems (GIS) have been employed for decades for diseases surveillance, prediction and intervention programs, its awareness and application to Veterinary Medicine in Nigeria is a recent phenomenon. Over the past couple of years, a number of veterinarians at the Department of Veterinary Public Health and Preventive Medicine, University of Ibadan, Ibadan, Nigeria have pioneered the use of GIS to study the Epizootiology of Trypanosomosis, African swine fever, Tuberculosis and Transhumant Pastoralism in Nigeria. This has been in collaboration with GIS personnel in the University's Department of Geography and the private sector. At Government level, the Federal Department of Agriculture and Rural Development recently sponsored five veterinarians (including the author) to the first leg of an intensive training on the application of GIS to Veterinary Epidemiology. The intensive four-week course took place at the Regional Center for Aerospace Survey (RECTAS), Ile-Ife, Nigeria, and is part of the capacity building aspect of the Nigeria component of the Pan African Program for the Control of Epizootics (PACE). RS/GIS is not yet in the curricula of any of Nigeria's five (5) veterinary schools, neither is there as yet any unit/center devoted to the application of RS/GIS to veterinary Medicine in Nigeria. Although the theme of the 2001 Congress of the Nigerian Veterinary Medical Association was "Advances in Information Technology: Impact on the Veterinary Profession", only one paper, dealt with the application of RS/GIS to Veterinary Medicine. To promote increased awareness and use of RS/GIS in Veterinary Medicine, multilateral assistance will be required in the training of personnel and equipping of Veterinary RS/GIS units.

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TOWARDS AN INCREASING AWARENESS AND USE OF REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEMS IN VETERINARY MEDICINE IN NIGERIA

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ABSTRACT

Although Remote Sensing (RS) and Geographical Information Systems (GIS) have been employed for decades for diseases surveillance, prediction and intervention programs, its awareness and application to Veterinary Medicine in Nigeria is a recent phenomenon. Over the past couple of years, a number of veterinarians at the Department of Veterinary Public Health and Preventive Medicine, University of Ibadan, Ibadan, Nigeria have pioneered the use of GIS to study the Epizootiology of Trypanosomosis, African swine fever, Tuberculosis and Transhumant Pastoralism in Nigeria. This has been in collaboration with GIS personnel in the University's Department of Geography and the private sector. At Government level, the Federal Department of Agriculture and Rural Development recently sponsored five veterinarians (including the author) to the first leg of an intensive training on the application of GIS to Veterinary Epidemiology. The intensive four-week course took place at the Regional Center for Aerospace Survey (RECTAS), Ile-Ife, Nigeria, and is part of the capacity building aspect of the Nigeria component of the Pan African Program for the Control of Epizootics (PACE).

RS/GIS is not yet in the curricula of any of Nigeria's five (5) veterinary schools, neither is there as yet any unit/center devoted to the application of RS/GIS to veterinary Medicine in Nigeria. Although the theme of he 2001 Congress of the Nigerian Veterinary Medical Association was ADVANCES IN INFORMATION TECHNOLOGY: IMPACT ON THE VETERINARY PROFESSION, only one paper (by the author), dealt with the application of RS/GIS to Veterinary Medicine. To promote increased awareness and use of RS/GIS in Veterinary Medicine, multilateral assistance will be required in the training of personnel and equipping of Veterinary RS/GIS units.

INTRODUCTION

GIS and to a lesser extent Remote Sensing have found increasing application to the study of the environmental factors affecting the incidence and patterns of diseases in animal populations worldwide. To promote their application, a major international conference, the GISVET conference was organized by the Department of Epidemiology of the Veterinary Laboratory Agency Weybrigde England in September 2001. In 2002, a GISVET website began operational and a special edition of the Journal Preventive Medicine was devoted to the proceedings of the 2001 conference (1).

In Africa, GIS/RS have found various applications in Veterinary Medicine but mainly in studies of the disease Trypanosomosis (2) and Theleriosis (3). Greater application has been in the related field of human Epidemiology. Thus GIS/RS have become an important tool for disease monitoring, prevention and control.

Their application in Nigeria is a recent phenomenon. A much-sited example was the use of a temporal analysis of Landsat Thematic Mapper satellite o tests the significance of a guinea worm eradication program based on changes in agricultural production (4). Another example was the discovery of the cause of skin diseases in a part of Kaduna metropolis in North-Central Nigeria. For a long time skin

diseases have been rampant in the area but the cause was unknown. A satellite map of the River Kaduna which ran through the city shown that certain parts of the river appeared brown, instead of blue which other parts appeared in the satellite picture. It was later discovered on investigation that some major industries discharged their chemical effluents and water directly into the river in the areas appearing brown, thus contaminating the river. Since residents used the river for some domestic use like washing and bathing, the got skin infections from the chemical wastes.

The use of GIS/RS in Veterinary Medicine is slowly catching on in Nigeria. At the University of Ibadan where the author works, two students each at undergraduate and postgraduate levels have sort in the last couple of years to apply GIS to the study of the incidence of Trypanosomosis, tuberculosis and a recent outbreak of African Swine Fever. At the National level, a GIS-based National Animal Disease Information System (NADIS) is being developed as part of the Nigerian component of the EEC sponsored Pan African Program on the Control Of Epizootics. It will include an Epidemio-surveillance Network and the assessment of the status of the five major Transboundary diseases. Five veterinarians including the author were sponsored to attend an intensive four-week training on the use of GIS/RS in Epidemiology at the Regional Center for Training in Aerospace Survey, Ile-Ife, Nigeria. A French Technical Assistant is in charge of the GIS program of the PACE. Likewise the curricular of the Veterinary schools in Nigeria are being reviewed to incorporate GIS.

Three major challenges and limitations face efforts to increase the awareness and use of GIS/RS in Veterinary Medicine in Nigeria. These are

- The acquisition of relevant hardware and software.
- The development of sufficient and relevant database.
- Training and retraining of personnel involved in the use of GIS/RS for Veterinary Medicine.

Although the EEC sponsored PACE program of which GIS is a component is a modest start, much more multilateral assistance is needed to actualize this desirable and ness Cary application of GIS/RS in Veterinary Medicine.

Conclusion

As noted by the FAO, computer supported, quantitative Epidemiology including risk analysis, disease modeling, GIS- based disease mapping, decision support systems a disease forecasting emergency system are areas of deficiencies in most national Veterinary planning (5). Nigeria is a typical example. There thus must be deliberate commitment by multilateral agencies to assist in the promotion of the application and use of GIS and RS in Veterinary Medicine, especially Epizootiology in Nigeria, if we must have a reliable and fast worldwide disease surveillance, monitoring, control, policy planning veterinary decision support system and information system.

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