Trade implications of bluetongue in Africa

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Summary

Bluetongue virus is endemic in most parts of Africa and control measures are influenced by a number of factors including climatic conditions, susceptibility of animals, presence of reservoir hosts, occurrence of *Culicoides* and the serotype incriminated in a particular locality. To export animals and animal products from endemically infected countries is a major challenge, as all these factors have to be taken into consideration. Attempts aimed at control or eradication of such a disease must therefore consider these factors very carefully.

Keywords

Africa – Bluetongue – Breed – Climate – *Culicoides* – Reservoir – Trade.

Introduction

Bluetongue (BT) has been recognised as a disease entity in South Africa for more than a century, since Merino sheep were introduced into the Cape colony (2). For many years, the disease was thought to be restricted to Africa, particularly south of the Sahara but, since 1943, BT has been reported in countries outside Africa such as Cyprus, India, Israel, Pakistan, Portugal and the United States of America. By the end of 2001, Bulgaria, France, Italy, Macedonia, Tunisia and Yugoslavia experienced outbreaks of BT. The disease has a history of periodic incursions into southern Europe where its impact can be devastating.

BT is primarily a disease of sheep although all ruminant breeds are susceptible to varying degrees. Indigenous South African breeds are less susceptible than the Merino, while most exotic breeds such as the European mutton breeds are more susceptible than the Merino. Susceptibility may also vary among individuals of a breed. Goats are susceptible to infection although clinical disease is rarely encountered. Cattle are frequently infected with BT virus (BTV), but clinical disease is rare (1). The absence of BT in sheep does not necessary imply the absence of BTV or viral activity in a particular region or country at a time. Sheep could therefore be regarded as merely an indicator of the presence of the disease.

BT is transmitted by midges of the genus *Culicoides*. To date, a number of *Culicoides* are known to harbour the virus and have been listed (5). Given the present inability to eradicate the vectors responsible, attention should be given to measures by which the susceptible host is protected from contact with them.

In an endemically infected country such as South Africa, prophylactic vaccination of sheep in undoubtedly the most practical and effective control measure. The most serious obstacle to effective immunisation is the existence of a multitude of serologically distinct virus serotypes. To date 21 of the 24 known BTV serotypes have been isolated from sheep in South Africa (3). It has been argued that to obtain effective immunity against so many serotypes poses a formidable challenge to any vaccine. Despite some degree of cross-immunity between heterologous serotypes, effective protection of sheep is dependent upon the presence of antibodies homologous to the challenge virus.

Climatic factors play a role in the epidemiology of the disease; nevertheless, BT occurs within relatively stable ecosystems (4). Recent climatic changes might presently be having an impact on the further spread of the disease (7). It is important to note that these climatic changes may now be enabling *Culicoides* to spread into territories that were previously less suitable.

The foregoing remarks indicate that it is virtually impossible to control bluetongue. In practice, this means living with the disease while attempting to minimise the risks and losses as far as possible.

Bluetongue is one of the diseases in 'List A' of the Office International des Épizooties (OIE) and has become a barrier to trade in animals and animal products. In some countries, the requirements of the OIE *Terrestrial animal health code* (6) have made it virtually impossible to trade in animals and animal products. Lack of knowledge of the epidemiology of the disease creates unnecessary requirements when trading in animals and animal products. The current process within the OIE to review Lists A and B diseases will offer an opportunity to update the bluetongue chapter in the *Code* (6).

When exporting live animals from endemic countries, importing countries require double sampling to reveal any possible rise in virus titres. Virus isolation is also a requirement. In certain instances, importing countries lack sufficient information about the disease or do not have diagnostic tools to confirm diagnosis. In such countries, additional measures are enforced to minimise risk of transmission of disease. Some countries require the presence of a surveillance programme, which in most instances is expensive for developing countries.

The direct losses due to mortality may be high in naive populations but in most countries in Africa certain breeds have adapted to local conditions. In such cases there is marked loss in condition of animals and thus marketing of slaughter animals may be delayed.

Conclusions

The abundance of *Culicoides* species, the presence of the reservoir hosts and the climatic conditions suitable for the spread of the disease in Africa, makes it impossible for African countries to control bluetongue. Any control measures or guidelines recommended to guide trade should be scientifically justified and should not be introduced to cause unnecessary barriers to trade. More research needs to be conducted to determine the climatic implications of the spread of BT and the presence of *Culicoides* in areas where they have previously never occurred.

The current status on the spread of animal diseases especially those which are transmitted by vectors, will place a challenge on the certification of products for export. The OIE, as an international standard-setting body, should look into a mechanism of certifying products free of diseases instead of countries putting all resources in for declaring disease freedom.

Finally, is it justified to include bluetongue as an OIE List A disease, i.e. have we not learned enough about the virus to recognise that we can live with it?

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