

## Economic impact of Blue tongue in the Netherlands

The economic consequences of the Blue tongue (BT) epidemic of 2006 and 2007 in the Netherlands was calculated and eight possible BT vaccination strategies for the expected epidemic of 2008 were ranked based on economic parameters. An economic model was constructed, reflecting Dutch livestock production systems for cattle, sheep and goats. The economic impact of BT has been calculated by an integration of demographic, epidemiological and economic data. The quantified economic impact of BT included i) production loss due to diseased farm animals, ii) diagnosis costs and costs for monitoring of BT in the Netherlands, iii) treatment costs for diseased animals, iv) economic impact as a result of measures to control the epidemic and v) economic impact as a consequence of export restrictions.

The total economic impact related to the BT epidemic in 2006 has been valued at 28.5 million Euros and to the BT epidemic in 2007 at 49.3 million Euros. Compulsory in-door housing was responsible for 63% of the total economic impact in 2006, transport restrictions 29% and diagnosis costs 8%. The production loss in 2006 was only 0.4% of the total economic impact because the number of BT infected farms and animals was relative low. In 2007, 62% of the total economic impact was production loss, 22% concerned the costs

for treating diseased animals and 13% of the economic impact resulted from the transport restrictions.

The cattle sector suffered most economic impact, i.e. 86% of total economic impact in the 2006 epidemic and 89% of the impact in the 2007 epidemic. Within the cattle sector, the economic impact for the dairy farmers was highest. Thereafter, the exporters and the quarantine farms for export experienced most economic impact. Within the sheep sector, the sheep producers suffered most economic impact.

The evaluation of the vaccination strategies is based on a comparison with the baseline scenario: the expected epidemic in 2008 in which no vaccination is applied. The calculated economic impact for the baseline epidemic equals 19.6 million Euros. Subsequently, the economic impact of BT epidemics in 2008 has been valued given different vaccination strategies. The reduction of the economic impact due to the vaccination strategy defines the benefit of the strategy. Based on the costs of the vaccination strategy and benefits, three economic criteria to rank the vaccination strategies have been calculated: cost-benefit ratio, net profit and the total vaccination costs.

Vaccination of all adult cattle in the four Northern provinces of the Netherlands is the best vaccination strategy to control the BT epidemic of 2008. The cost-benefit

ratio of this strategy is 0.31 what means that each €0.31 of costs result in €1.00 of benefits. The net profit is 6.2 million Euros, while vaccination costs should be 2.8 million Euros. The second best vaccination strategy is vaccination of all adult sheep in the Netherlands and all adult cattle in the four Northern provinces. The cost-benefit ratio of this strategy (0.82) is 2.6 times higher than the ratio of the first ranked strategy, its net profit (1.9 million Euros) is 3.2 times lower, and the vaccination costs (8.7 million Euros) are 3.1 times higher. The third ranked strategy is to vaccinate all adult cattle in the whole of the Netherlands. Here the cost-benefit ratio (0.83) is 2.7 times higher than the first ranked strategy, the net profit (2.2 million Euros) 2.8 times lower, while the vaccination costs (10.2 million Euros) are 3.6 times higher.

From the sensitivity analysis it can be concluded that the ranking of the vaccination strategies will not change when the expected number of BT infected farms increases or decreases.

This summary is based upon the following paper: A.G.J. Velthuis, H. Saatkamp, M.C.M. Mourits, A.A. de Koeijer and A.R.W. Elbers (2008). Economic impact of the Dutch Bluetongue epidemic of 2006 and 2007. Submitted for publication.

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