Antibodies against Schmallenberg virus [SBV] in 70 per cent of the dairy cattle population in the Netherlands

The Central Veterinary Institute (CVI) has developed a test for the demonstration of antibodies against SBV. Until recently, only a PCR technique enabled the detection of virus particles in brain material of deformed newborn calves, lambs, and goats. In contrast to lambs, many deformed calves were found negative by the PCR test. Serological examination for antibodies against SBV can indicate with certainty if animals have undergone infection, despite the fact that the virus cannot be demonstrated by the PCR technique.

Following the tests it is estimated that the prevalence of antibodies against SBV in the dairy cattle population in the Netherlands is about 70 per cent. The prevalence of SBV antibodies in dairy cattle in eastern Netherlands is found to be considerably higher than findings in the north and south. Within infected units, SBV serology in 2 infected sheep flocks and 2 dairy cattle farms was found to be in the range between 70 and 100 per cent.

The CVI prevalence study incorporated 1123 frozen-stored blood samples from dairy cows, which were sampled between 1 Nov 2011 and 1 Feb 2012 in the context of bluetongue monitoring. The samples are proportional to the presence of dairy cows in the selected provinces, from which a representative sample was obtained. The sample size was chosen so that an accurate estimate could be made on a national level, and also with sufficient accuracy to detect differences in prevalence between the 3 regions (north, east, and south).

To obtain a preliminary impression of the within-herd SBV prevalence, a large number of adult animals in 2 sheep flocks and in 2 dairy cattle farms, recognised earlier as SBV-infected by means of positive PCR test in one or more deformed lambs/calves, were serologically tested.

The high prevalence of antibodies against SBV in the dairy cattle population is indicative of widespread exposure to the virus. It becomes clear that the number of clinically affected cattle farms and of affected animals within them, based on the PCR diagnostics in malformed calves, was grossly underestimated, and this – most probably -- not only in Netherlands but also in other SBV-affected countries.

So far there are no comparable prevalence studies of antibodies against SBV in other countries. But a seroprevalence study for Akabane virus, which belongs to the same virus family as SBV, applied following a 1974 outbreak in New South Wales, Australia, showed a seroprevalence of 80 per cent.

The finding of significantly higher SBV seroprevalence in East Netherlands compared to other parts of the country may indicate that the virus was introduced there. This is supported by reports in September 2011 of the 1st clinical cases of fever, watery diarrhea, and reduced milk production in dairy farms located in eastern Netherlands.
The 1st results on the within-herd prevalence suggest that probably, at the end of the SBV season most animals in affected holdings will be found infected. Similar results were seen in relation to Akabane virus infections in Australia and South East Asia, where, sometimes within 2 to 3 weeks but at least within 2 months all sentinel (susceptible) animals underwent infection.

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[We are very grateful to Gert van der Hoek, Flutrackers moderator, for kindly forwarding this new study to our attention. The development a serological test for the new virus, commissioned by the Dutch Ministry of Economic Affairs, Agriculture and Innovation, was accomplished by the Central Veterinary Institute (CVI) in a comparatively short time: a successful and much commendable effort and outcome.

The serosurvey results might not astonish those familiar with Akabane disease, but the study was vital within geographic and ecological territories, which are significantly different from known Akabane-afflicted regions. It assists in the estimation of the past and still-to-go course of this most remarkable epizootic and in the due planning of control policy.