What Is Schmallenberg Virus?

Between August and October 2011, some adult cattle in the Netherlands and Germany were showing signs of ill health. The signs included mild to moderate fever, reduced milk yield, and diarrhoea. Testing for common causes was negative.

From December 2011, abortion and stillbirths associated with foetal deformities, especially of the limbs and skull, were being experienced in sheep flocks, and to a lesser extent cattle and goat herds, in the Netherlands, Germany and Belgium.

A new virus was identified in November 2011 as the cause of both conditions. This was named 'Schmallenberg virus' (SBV) after the German town where the virus was first identified. Scientists found that the virus was very similar to one in Asia and Australia, the Akabane Virus.

This is a new disease that had not been detected anywhere else in the world before.

Surveillance was stepped up across Britain, with Defra and AHVLA raising awareness amongst veterinary surgeons of the clinical signs to watch out for. This awareness raising was replicated amongst farming organisations.

In January 2012 the first GB case was detected in lambs in a flock in the east of England.

How Does It Spread?

SBV is spread by biting insects, in this case members of the Culicoides midge family. These were also the midges that brought and spread Bluetongue virus serotype 8 (BTV-8) to the UK. They are very effective at transmitting SBV, more so than they were with BTV-8. This has resulted in the virus spreading across large distances quickly, and we now have evidence of it in every rural county in England and Wales. From meteorological mapping we know the midges carrying the virus were initially brought in the wind to GB from infected regions in the continent.

Midges transmit SBV and are very difficult to control or prevent from spreading the virus, particularly in the summer.

It does mean however that there is much less virus spread over the winter months when it is colder, although temperatures last winter were not cold enough to kill off all the infected midges. No other method of spread has yet been found but research is ongoing and so they are not yet discounted.

What Effect Does the Virus Have?

The way the virus works is quite complex. In adult dairy cattle the disease is acute and short lived. The clinical signs in individual cows, of fever, milk drop and diarrhoea, last up to 5 days. As infected midges bite other cows, signs in the herd last for 2 to 3 weeks, giving the perception of a longer clinical period.

Clinical signs in young stock, adult beef cattle or sheep are unlikely to be observed.

In some herds, especially when out at grass in the summer, it might not be obvious that there is even a problem. The virus lasts for 2 -5 days in the blood of infected animals. During this time the animal is infective so can perpetuate the virus spread when bitten by other susceptible midges. After this time, immunity to the virus develops.

The dangerous aspect of this virus relates to the consequence of infection in pregnancy. If infection occurs in the early stages of pregnancy in cattle and sheep then the virus can cross the placenta and affect the foetus. At this stage the foetal immune system is still developing so it cannot fight the virus off.

The critical stage of pregnancy for infection to occur in sheep is between days 25 - 50, and in cattle between days 70 – 120.

Infection at this time may result in abortion, or at term the birth of malformed offspring. Since the virus attacks the nervous system of the foetus the affected newborn animals often

have fixed and inflexible joints, twisted necks or spine, a dome skull, a short jaw and other nervous style abnormalities.

The affected lambs born at term are a result of their mothers being infected 3 or 4 months earlier. Affected calves are from mothers infected 5 to 7 months earlier. The mothers may not have displayed any signs of illness.

The impact on individual farms across Britain this season (2012-2013) has been quite variable with some reporting incidences of 30-40% amongst early lambing crops but generally across the EU the impact of SBV continues to be seen as fairly low.

The higher incidences in individual herds or flocks may be related to management practices such as synchronisation.

Synchronisation ensures that all dams that held at mating or AI are all within a few days of each other at the same stage of pregnancy. So if the virus arrives on farms for the first time at that critical point then a large proportion of the lamb or calf crop could be impacted.

What Should I Do If I Think the Virus Has Been On My Farm?

There are a lot of causes of fever, milk drop and diarrhoea in dairy cattle, and a number of causes of abortion and sometimes deformities in lambs and calves. SBV is not a notifiable disease so there are no legal reporting requirements or movement controls that you need to comply with.

- Do not assume that SBV is the root cause of these problems.
- Speak to your vet and take their professional advice.
- An online survey is running for you to tell us about the impact of the virus on your farm during lambing and/or calving.

Is there Immune Protection?

The Akabane virus, a close relative of SBV, affords good immunity against subsequent re-infection. Reports of new cases in Europe suggests that farms which were affected last year are not infected this year so we think natural immunity is likely to be good, but as this is still a new virus and research is ongoing we must be cautious in forecasting how long it might last or how strong it will be.

How Can I Protect My Herd or Flock?

At present there is no vaccine against SBV available. Due to reasons of commercial confidentiality, the VMD cannot normally comment on whether it has received a specific application for a veterinary medicine marketing authorisation, but due to the exceptional circumstances we have been made aware that they received an application from at least one manufacturer. This is being assessed now. The VMD are aware of the time pressures surrounding this and are viewing it as a priority.

In order to gain a provisional marketing authorisation the VMD has to assess evidence provided to establish that the vaccine is safe to use, and won't cause more harm than good.

Changes to breeding management practices and systems may be possible on some farms and we suggest livestock keepers discuss options with their vets or advisers.

What Next?

If immunity is good then the majority of the breeding herd in England and Wales should be protected against infection for the start of the 2013 breeding season.

Vulnerable stock will be those born unaffected this year, which fail to acquire natural immunity before pregnancy.

UK institutes are working collaboratively with European organisations researching how the midges spread the virus, how the virus causes disease, duration of immunity, other routes of transmission, infection in other species and reservoirs of infection, and the role of semen and embryos in transmission.

This document has been produced in association with the NFU, NBA, NSA, BVA, CHAWG, SHAWG, AHLVA and Defra.