

Identification and elimination of PI animals is essential in addition to vaccination

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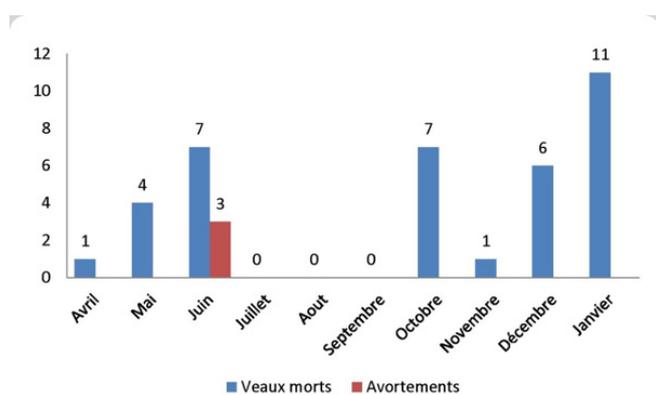
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“Following the detection of circulating BVD virus, the farmer vaccinated the animals but did not detect and cull PI animals until much later. His losses were estimated at €28K.”

Background

In December 2013, a cattle farm in the Pyrénées-Atlantiques of 70 lactating Blondes d'Aquitaine and 45 heifers was struck by a series of abortions. Heifers are bred at around 28 months and average age at calving is 37 months. The calving interval is around 400 days.

Cows and heifers are not raised on the same site: cows are at the Garris site while calves are transferred from Garris to Demi-Lune at around 10 months to 1 year, where they remain until 20 months old. At that time they are transferred to a third site in Laharmina where they remain until one to two months before calving. The future primiparae then join the cows at the initial Garris site (see Figure 1).



Preliminary Indication

In December 2013, the only way to fight virus propagation on the farm was vaccination of mothers combined with screening and elimination of IPI animals among the calves due to be born in 2014. However, after vaccination of the adult cows and the heifers, no calves were screened in 2014. In spite of an increase in mortality among 0 to 6-month-old calves in 2014 (11.1% mortality up from 4.6% in 2013), the farmer didn't contact his veterinarian.

The serological survey conducted in December 2013 on the November 2013 prophylactic blood samples show that it is likely that there was no circulation of the BVD virus among the Laharmina heifers (14 seronegative animals) but that it was present among the adult herd in Garris (6 seropositive cows of the 13 tested). In Garris, the farmer owns another cattle feedlot where there is a lot of animal traffic. The same people care for both the farm cows and feedlot cows. Materials are also shared between the two operations. So a cow excreting the BVD virus probably came through the feedlot and was the source of the virus spreading among the Garris cows.

Further Development

Veterinarians were called to the farm in late 2014 due to a major outbreak of colibacillar diarrhoea among the calves along with a severe episode of cryptosporidiosis, as well as respiratory pathologies of *Mannheimia haemolytica*.

For cattle pregnant up to mid-January 2014, namely those inseminated as of 28 March 2013, results will be different according to gestational stage at time of viral infection.

Cows inseminated as of 28 March present a risk of bearing IPI calves. This risk is present for cows inseminated up to 8 December 2013. In fact, for cows inseminated as of early December 2013, if BVD was still circulating, it would cause abortions (period of 40 first days of gestation during which the cow aborts if she is infected with BVD). For those cows inseminated between 28 March 2013 and 8 December 2013, it would be necessary to perform 2 PCR tests on IPI calves spaced a month apart.

We know with near-certainty that there was virus circulation between 17 October and 26 November 2013, so cows inseminated between 15 June and 18 October present a high risk of giving birth to IPI calves. The birth dates of these calves were between 10 April 2014 and 8 August 2014. If screening all these calves is impossible, screening calves born within this period is essential.

Treatment Applied

The high mortality rate among the calves (see Figure 2), as well as the presence of calves about 6 months old with clinical signs consistent with a mucus membrane disease (marked lethargy, diarrhoea, interdigital and mouth ulcers) led the veterinarians to carry out BVD PCRs on these calves. 3 calves of the 11 tested positive for BVD.

After this finding, a search for pestivirus was launched on a mixture of blood samples of calves born in 2014: 15 calves of the 61 tested presented high viraemic loads suggestive of IPI status. Of these IPI calves, only one was born of a heifer (3258). 13 others were born of cows and the status of the mother of one of the IPI calves is unknown.

Result

This study also shows that a close examination of events in a herd (abortions, mortality, and vaccination) helps to accurately determine the birth periods at risk for IPI calf production. Identifying these periods would allow one to take measures to limit virus propagation. Actually, while awaiting IPI status, it is necessary to separate the potentially virus-excreting calves from the pregnant cows as well as from the other calves.

Questions

Q1: After confirming the circulation of BVD virus, vaccination did not provide complete protection of the herd because:

1. It was done too late.
2. PI animals were not identified and eliminated.
3. Infection pressure was too strong.

Q2: The period at risk for PI during gestation was identified as:

1. April to August 2014.
2. October to November 2013.
3. June to October 2013.