

We thought we would stay bovine viral diarrhoea-free... ... but we were wrong

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After finishing her studies (Degree & Master) in University of Santiago de Compostela Veterinary Faculty, Raquel started to work in dairy farms in Northwestern Spain as a vet practitioner. In the last years she has been working as a freelance practitioner, focusing on bovine production medicine, continuously seeking areas of improvement to achieve higher profitability in the farms.

BVD case report



Location of the holding

The operation is located in the Northwest of the Spain in the community of Galicia, near the border with Portugal. It is found in the municipality of Xinzo de Limia, an area with a long agricultural tradition.



Intensive dairy-production free-stabling farm with a total of 600 animals, of whom 280 are lactating cows.



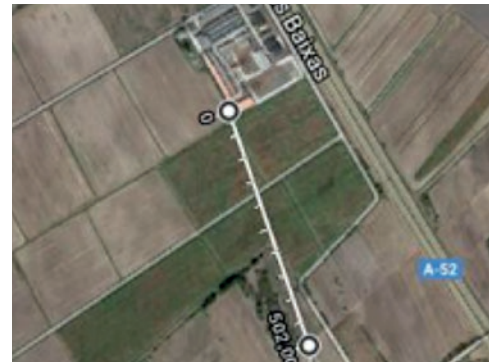
The holding has good biosecurity measures.

The farm has replaced its own livestock on-site for more than 20 years without the introduction of any other herd animals.



BVD-FREE (quarterly milk tank analysis and annual serology of growing calves aged over 9 months, negative for p80 Ig). A multipurpose VACCINE including inactivated BVD virus had been administered every six months since 2010.

The nearest farm is 500 m away.



All the clothing and footwear used by the personnel are from the farm.



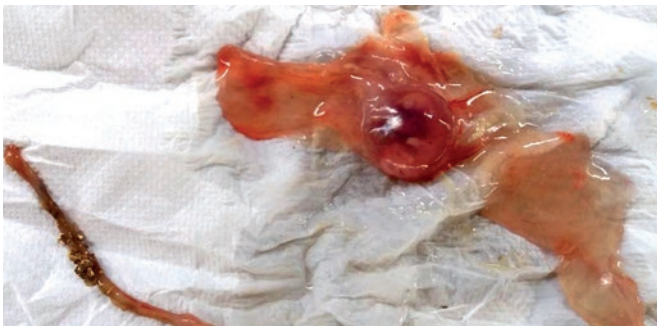
The facilities have an enclosing perimeter fence that restricts access.



Clinical case description

At the end of 2017 and beginning of 2018 an increase in the incidence of spontaneous abortion and embryonic losses was recorded, as well as an increased birth rate of dead or weak calves with neurological signs and which died after a few hours or days.

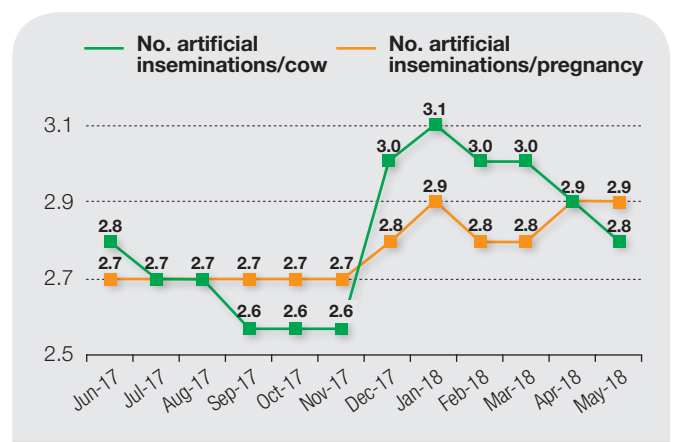
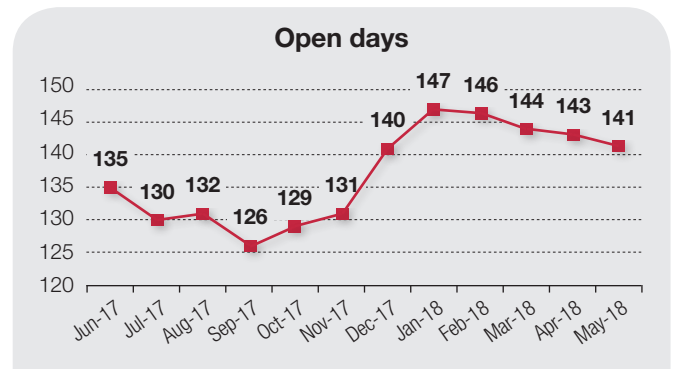
Embryonic loss at 42 days



Calf born with neurological signs (unable to stand up, "star-gazing")



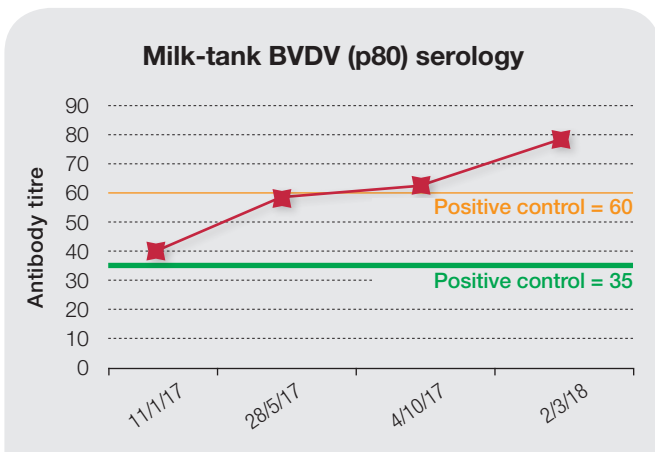
In addition, from December 2017 a slight worsening in the reproductive-level indices was recorded as well as an increase in the number of open days and inseminations per pregnancy, reflecting a decline in the overall herd fertility.



In addition, the quarterly milk-tank monitoring showed higher BVD Ig p-80 titres in October 2017, which triggered the following analysis in February 2018.

**Bovine viral diarrhoea virus (BVDV; p80)
interpretation criteria**

Milk-tank antibody titre	Estimated seroprevalence
NEGATIVE: < 35	0-10%
LOW-POSITIVE: 35–60	10-30%
HIGH-POSITIVE: ≥ 60	> 30%



Suspecting that all of these observed signs may be caused by BVD virus we proceeded to serological testing (Elisa for Ig p80) in a cohort of animals:

- 12 heifers (aged 9–14 months)
- 12 cows (6 with spontaneous abortions and 6 randomly selected)

The results indicated that ALL the samples from the **HEIFERS** analysed were **POSITIVE**, confirming the existence of **VIRAL CIRCULATION** in the herd.

SERVICIO de DIAGNÓSTICO de BVD
 Departamento de Sanidad Animal
 Universidad de León

Orden de entrada	5786	Fecha de recepción	27/2/18
Origen de las muestras			
Veterinario	RAQUEL TEIXERA (ORENSE)		
Explotación	SIN RESEÑAR		
Muestras de sangre recibidas			
24			
Análisis solicitado			
Anticuerpos frente a pestivirus. Ac frente a la proteína NS3 (p80)			
RESULTADOS			
MUESTRAS POSITIVAS:			
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 20, 21, 22.			
MUESTRAS NEGATIVAS:			
14, 15, 17, 18, 23, 24.			
MUESTRAS DUDOSAS:			
Observaciones			
Técnica empleada IDEXX BVDV p80 Ab			
Remitir números de tubo numerados a partir del 1			
Poner mi nombre en los paquetes			
Fecha del análisis	28/2/18	Fecha envío de resultados	1/3/18

León, 1 de marzo de 2018
Fdo.: Marcelino Álvarez



Strategies for action

Once the presence of viral BVD circulation was confirmed the main objective was to protect animals against infection and prevent the spread of the virus, thus two main measures were taken:

1. The persistent infections (PIs) present on the holding were detected and eliminated.
2. Vaccination to ensure complete foetal protection, preventing the birth of new PIs that can perpetuate the transmission of the infection.



1. Detection and removal of PIs

In order to detect PI animals as soon as possible, we analysed the presence of the virus in all the animals present on the holding, with the following results:



LACTATING COWS:

PCR on the tank milk

↓ BLOOD
SAMPLES

NEGATIVE



DRY COWS + HEIFERS aged > 8 months:

ELISA for Ag in blood



GROWING CALVES aged < 8 months:

ELISA for Ag in ear tissue

10 POSITIVES



10 POSITIVES

↓ CONFIRMATION AT 21 DAYS
(Elisa for Ag in blood)

1 TV

+

9 PIS

Transient
viremia

↓
One 14.5 month-old heifer
with normal development
(inseminated near the
second week)



2. Vaccination

The birth of PI calves on the holding is evidence that the BVD vaccine used up until then and every six months (a multipurpose vaccine with inactivated BVD virus) had failed to provide fetal protection against the virus.

In March 2018, we decided to change to a live monovalent vaccine (Bovela®) administered once a year to all animals from the age of 3 months, thus ensuring the foetal protection required to avoid the birth of new PIs.



Summary

- Here we describe a clinical case of an intensive dairy-cattle operation which had been disease-free for many years, which had good biosafety measures, and was vaccinating against the BVD virus.
- This case highlights the continuous risk of BVD virus entry into any operation and for the need for vaccines that provide total foetal protection to prevent the birth of PI animals that perpetuate the transmission of disease through the herd.