

Learning Lessons from US Experience of Porcine Epidemic Diarrhoea

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Porcine Epidemic Diarrhoea was regarded as an exotic disease in the Americas until 2013. So what lessons can be learned for the global industry from the appearance of this devastating disease in the United States over the last 14 months? Anna Romagosa shared her insights at a recent pig health conference in Italy, reports Jackie Linden.

In April 2013, the first cases of Porcine Epidemic Diarrhoea (PED) were reported in the US and since then, the virus (PEDv) has spread across the country to affect 30 of the 52 states, according to Anna Romagosa of PIC, addressing the European Symposium on Porcine Health Management (ESPHM) in the Italian town of Sorrento in the first week of May.

Data from the University of Minnesota reveals that 680 breeding herds in the country - around half of the herds - have been affected.

The source of the virus in the US remains a mystery but genetic sequencing shows it has more than 99 per cent similarity to one circulating in China in 2011-2012.

Also in 2013, the PEDv was identified in Mexico.

New variants of the virus were identified in the US at the start of 2014, indicating the introduction of more than one genotype.

Also in January 2014, the first cases were found in Canada - in the province of Ontario. In the following months, PEDv outbreaks were seen on farms in Manitoba and Prince Edward Island and the virus was isolated in a slaughterhouse in Quebec.

Two months later, Ms Romagosa reported, a new Porcine Delta Corona virus (PDCoV; named by other sources as Swine Delta Coronavirus, SDCv) emerged in the US. It had subsequently been found in nine states by the end of April. (Fourteen states had confirmed PDCoV by the third week of May 2014).

Also by March 2014, PEDv had been reported in Colombia, Dominican Republic and Peru.

PDCoV had spread to six pig farms in the Canadian province of Ontario by March-April.

First Responses to Outbreaks

According to Ms Romagosa, the initial response by the diagnostics labs in the US was good and there was rapid identification of the gaps in knowledge about the virus. Furthermore, the National Animal Health Laboratory Network (NAHLN) began to compile and publish data on outbreaks and virus isolation from a number of veterinary diagnostic laboratories and the University of Minnesota initiated a Swine Health Monitoring Program. It was at first thought likely that PEDv was transferred from the US to Canada on the many vehicles transporting pigs across the border but later investigations revealed that 18 out of the first 20 cases in Canada had a common feed supplier, and porcine blood products were included in the diets.

The virus is thought to be spread via the oro-faecal route. It can be present in high concentration in the faeces and a low infection dose is required for new cases.

Normal biosecurity measures are not effective to prevent virus breaking-through, said Ms Romagosa. It is known to survive in manure for 28 days and, while disinfection is effective, heating is also required. The virus also spreads laterally in the air for up to three miles.

Cost of PEDv to the US Industry

Against the trend of the recent past, four per cent fewer pigs were reported in the first quarterly report on the US industry than 12 months previously, according to Ms Romagosa. For 2014, the reduction in output is forecast at between five and 10 per cent - these reductions being largely the result of PEDv increasing piglet mortality.

For an individual producer, mortality rates in new litters can be of the order of 80 to 100 per cent. Herd immunity does build after an outbreak and baseline production may return in around six weeks.

Lessons Learned from PED Outbreaks in the US

One of the main issues highlighted by the PEDv outbreaks is the extent of pig movements in North America.

While much of the production takes place in the Midwest, most of the markets are on the eastern and western coastal regions. Around half a million pigs are transported across the state of Iowa every week.

Before the outbreaks, surveillance was passive, allowing the virus to spread widely before its devastating nature was truly appreciated.

Traceability in the pig meat supply chain has been improved, with more than 95 per cent of farms now having a seven-digit identification code.

USDA classified PED as a "transboundary disease" rather than a notifiable disease, a factor that prevented the authority from mounting a greater response or to require compulsory submissions in case of suspected outbreaks.

Future PED Prospects

It is currently unclear whether the spread of PEDv in the US can be stopped, according to Ms Rosagamo, but the coming summer 2014 will be crucial to answer that crucial question. The virus has been eliminated from around 30 per cent of the farms on which it has been found.

She added that the role of PDCoV in PEDv and which virus was present in the US first are questions we cannot yet answer.

PED from the European Perspective

Our understanding of the PED situation in Europe is limited, said Ms Romagosa, adding that we do not know which strain or strains may be circulating in Europe, though it is unlikely to be the American/Asian one as outbreaks of unexplained clinical disease have not been reported.

PDCoV is not thought to be present in Europe.

The degree of immunity to the new PEDv strains in European pigs is also unknown, she added.

These gaps in our knowledge and the devastating nature of PED on pig production should serve as the best incentives for European pig veterinarians and farmers to be on alert for signs of disease.

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