Evidence accumulates world-wide to show that subclinical PCV2 infection occurs frequently in sows and is likely to damage their reproductive performance, but veterinarians and farmers can now control the risk by vaccinating the sow herd with the same vaccine they apply to piglets around weaning.

A pig pathogen can cause serious economic damage even without producing visible signs of sick or dying animals. That is certainly true of the porcine circovirus type-2 known internationally as PCV2. It may be most notorious for its central role in the piglet wasting disease PMWS, but the file of evidence grows thicker every year to show that the virus can also be the source of an extremely damaging subclinical infection in sows.

What is more, sows infected subclinically with PCV2 are now understood to occur frequently around the world. It means that although many sows in many countries look quite healthy and normal, they harbour a virus which most definitely has the potential to erode the reproductive performance of their herd.

**Sow-herd coverage**

This is important information for herd operators and their veterinary advisers. Above all, it indicates that herds operators and their veterinary safeguards reproductive health status as a consequence of PCV2 infection. The veterinary team wanted to determine if giving sows a PCV2 vaccine affected their reproductive performance. Therefore Ingelvac CircoFLEX was applied to half the sows and gilts and both vaccinated and non-vaccinated groups were followed for the full breeding cycle. A statistically significant difference emerged for farrowing rate in favour of the vaccinated sows – see Table 1 for details. The improvement resulted in the herd weaning 2,049 more pigs per year and this meant that vaccinating the sows showed a rate of return on investment of 16:1.

**Distinct effects**

The observations of PCV2 presence and effect in the Canadian herd have reflected the view among specialist virologists that the results of infection in sows tend to take two distinctly different forms.

One is the clearly clinical version, in which reproductive failure is obvious and characterised primarily by the delivery of mummified or non-viable piglets at farrowing. The precise signs seen with this form will vary according to the timing of infection of the foetus inside the womb during the sow’s gestation. Early infection (up to about 35 days) generally leads to the death of embryos, risking smaller litters or returns.

A mid-term episode (within the range of 35-70 days) begins the risk of mummified foetuses and – to a lesser extent – abortions and that continues through to parturition. Late infections (between 70 days and full term) add the further risks of delayed farrowings and the birth of weak or stillborn pigs.

But the second possibility is that there is a subclinical infection inside the uterus, detectable as in the Canadian study only by finding evidence of circovirus DNA or antibodies. And whereas clinical signs of a PCV2 infection typically occur in gilts and first-litter sows, the subclinical form can arise in all the herd’s breeding females.

For 20 years or more, it has been known that subclinically affected sows may have a low farrowing rate. The sows can infect their own foetuses in the womb, which links to poorer reproductive performance through the birth of smaller litters and weaker piglets.

On the positive side, research and practice have shown conclusively that the effective way to control a subclinical infection of PCV2 in sows is to give them an appropriate vaccine.

**Benefits to the dam**

In fact the expert investigators say that PCV2 vaccination of sows in a breeding herd has multiple benefits. These begin, of course, with the fact that the sow herself gains active protection against the circovirus.

Her improved health status as a result of being immunised against PCV2 should also help her to deal better with other disease challenges that arise.

But even more notably, the protection given the dam by vaccination guards against a subclinical infection of the virus and therefore allows her to provide a higher level of reproductive performance. As PCV2 illustrates, describing an infection as subclinical does not necessarily imply that it is insignificant. Although in the breeding herd it can be subclinical at the level of the sow, in the sense that she has no outward signs of ill-health, its presence

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<th>Parameters</th>
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<tr>
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<td>Average total mummified pigs per litter</td>
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* Different superscripts within a row indicate significant difference at p<0.05

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ence nevertheless starts a chain of events culminating in clinical effects for her progeny that result in poorer reproductive performance figures.

Many studies over the years have referred to a transfer of the circovirus across the placenta from sow to progeny during gestation. Piglets infected with PCV2 while in the womb can be responsible for spreading the virus after their birth because they have been born viraemic.

However, the prevalence of piglets with the intra-uterine infection is greatly reduced by vaccinating sows ahead of the expected exposure time.

Compatible vaccinations

What happens if you vaccinate piglets at weaning and they are from vaccinated dams? That is what an American investigation set out to discover at a multi-site production network of 2,400 sows.

It gave two administrations of Ingelvac CircoFLEX at six weeks and three weeks before farrowing, in order to simulate the highest degree of inoculation likely to be encountered in the field, and applied them to half the sows in a group of 252 pregnant dams.

Their progeny were then assigned randomly to be vaccinated at three weeks old or left as non-vaccinated controls and both categories were followed to day 125.

The researchers found that dam vaccination by itself did not improve pig performance – but nor did it interfere with the active immunisation of the young pigs.

The results in Table 2 show how mortality and culling rates were significantly lower in vaccinated piglets, and their growth rate to 125 days was significantly increased, regardless of whether or not their dam had also received the vaccine.

The compatibility of these vaccinations has been further underlined in 2015 with the decision of the European Medicines Agency to grant first-ever approval for the use of Ingelvac CircoFLEX on pregnant and lactating sows as well as piglets.

The approval relating to sows recognises that the vaccine is safe to use during all stages of gestation and lactation, to reduce clinical signs associated with PCV2 related disease – offering in practical terms the prospect of having fewer stillbirths, a better farrowing rate, more piglets born alive and improved results for pigs weaned per sow per year.

The vaccine is already the global market leader in the overall PCV2 vaccine segment.

The extension to the official product approval in Europe means that veterinarians and farm operators can now use Ingelvac CircoFLEX in an even broader vaccination of the whole animal inventory within a sow herd.

Safe for use at all stages

Given that European approval followed trials in which the vaccine had to be proven safe for use at all stages of the breeding cycle, users of Ingelvac CircoFLEX in Europe as in other parts of the world can consider applying it to sows in a programme of mass vaccination – being completely confident about its protective power and safety. We are suggesting its application as a single dose to every sow in the herd at the same time, regardless of her pregnancy or suckling status, and that this mass vaccination is done every six months.

With what is now known about the high prevalence of subclinical PCV2 infection in sows around the world and the effects that this can have on performance, the opportunity to control it by effective vaccination must be highly attractive.

References are available from the author on request.

<table>
<thead>
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<th>For sows and piglets</th>
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<th>N-V</th>
<th>V-N</th>
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* Significant difference a,b = p < 0.01; k,d = p < 0.0002; e,f = p < 0.05