

# Ingelvac<sup>®</sup> PRRS KV

## Uses:

An inactivated, oil adjuvanted Porcine Reproductive and Respiratory Syndrome (PRRS) virus vaccine containing at least 2.5 log<sub>10</sub> Immuno Fluorescence units PRRS virus P120 strain per 2 ml dose.

For reduction of the reproductive disorders in sows and gilts caused by Porcine Reproductive and Respiratory Syndrome virus (European strain), in a contaminated environment. Vaccination reduces the number of early farrowings and the number of stillbirths.

## Contraindications and warnings:

Vaccination may induce a transient oedema (up to 3 cm) generally lasting less than one week, and a small local reaction (granulomas) without any adverse effects on the health and performance of the animal. Larger reactions (up to 7 cm diameter) have been occasionally observed after frequent repeated vaccinations. Vaccination may rarely cause hypersensitivity reactions. In such cases appropriate symptomatic treatment should be carried out. Vaccinate only healthy animals. Use normal procedures for handling animals. No adverse effects on serological response have been observed when the vaccine is administered simultaneously (but via a separate injection site) with inactivated vaccines against parvovirus, influenza and Aujeszky's disease. It is recommended that no other vaccine should be administered at the same time as the product. No undesirable effects were observed after administering the vaccine to pregnant or lactating animals.

## Withdrawal period: Pharmaceutical Precautions:

Zero days.

Store at 2°C to 8°C (in a refrigerator), protected from light.

Do not mix with other medicinal products.

Use immediately after opening.

## Legal Category:

POM

## Marketing Authorisation number:

Vm 00015/4064

## Marketing Authorisation holder:

Boehringer Ingelheim Limited,  
Ellesfield Avenue, Bracknell,  
Berkshire, RG12 8YS UK



## References:

Data on file

Segales *et al* J Vet Diagn Invest 2000 Jan;12(1):3-14.

Allan GM, Ellis JA. Arch Virol 2000;145(11):2421-9.

Allan GM, McNeilly F, Ellis J, Krakowka S, Meehan B, McNair I, Walker I, Kennedy S. 16th IPVS, Retrospective serological study on PCV2, PRRSV, ADV-(gE) and Mycoplasma hyopneumoniae in a herd experiencing PMWS in Italy.

P Martelli *et al* 16th IPVS, PRRS virus infection in pigs naturally affected with PMWS in Spain.

Further information is available from: Boehringer Ingelheim Vetmedica, Ellesfield Avenue, Bracknell, Berkshire RG12 8YS. Telephone: 01344 746958 Email: [vetmedica.uk@boehringer-ingelheim.com](mailto:vetmedica.uk@boehringer-ingelheim.com) Boehringer Ingelheim Vetmedica is a division of Boehringer Ingelheim Limited.

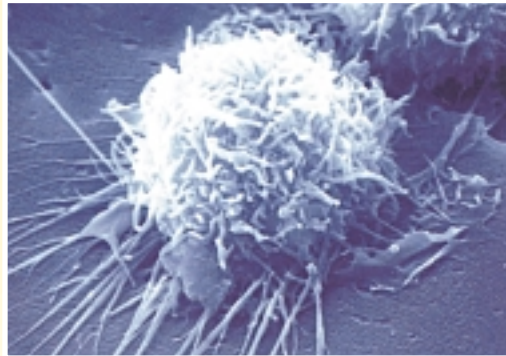
# Porcine Reproductive and Respiratory Syndrome



...the next chapter

**INGELVAC**  
PRRS KV

# Ingelvac® PRRS: Making History



Normal non infected porcine alveolar macrophage (Electronic Microscope)

In the 1980s a previously unrecognised disease syndrome caused heavy production losses in pig herds in North America. In the following years this syndrome appeared in many other major pig producing areas of North America and Europe.

In Europe a devastating epidemic, with estimates of 1 million or more pigs lost, occurred in the winter of 1990/91. It has since spread worldwide, becoming endemic in the major swine producing areas of the world.

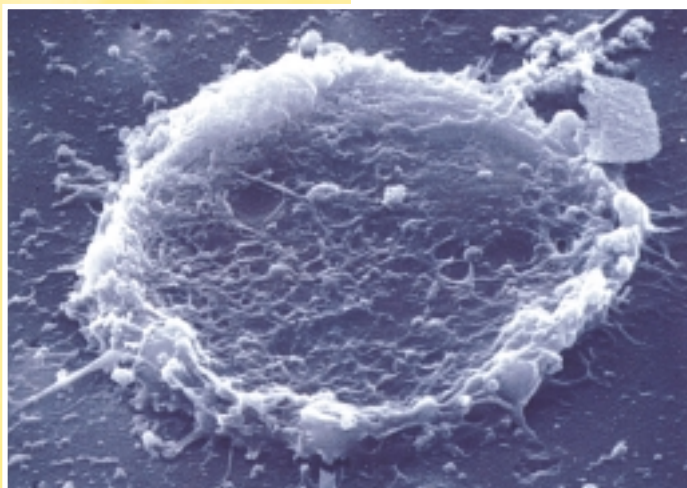
The disease was formerly described by different names, such as Pig plague 1989, Mystery Swine Disease (MSD), Abortus Blauw, Blue Ear Pig Disease, or Porcine Epidemic and Abortion and Respiratory Syndrome (PEARS). In April 1991 a meeting of European Community veterinarians agreed on the name, **Porcine Reproductive and Respiratory Syndrome (PRRS)**, which was subsequently adopted internationally.

The **PRRS** syndrome is caused by a virus which was identified in Europe (the Netherlands) in 1991 by Wensvoort *et al.* The group called it Lelystad virus after the town that contained their research institute. In the USA Boehringer Ingelheim Animal Health Inc. isolated the American strain of the virus, recognised as ATCC VR-2332, in a proprietary cell line from the lung of a gnotobiotic pig, infected with field virus provided by the University of Minnesota. PRRS virus is an RNA virus which grows preferentially in porcine alveolar

macrophages. Its molecular characteristics have led to its classification as a member of the Arterivirus group.

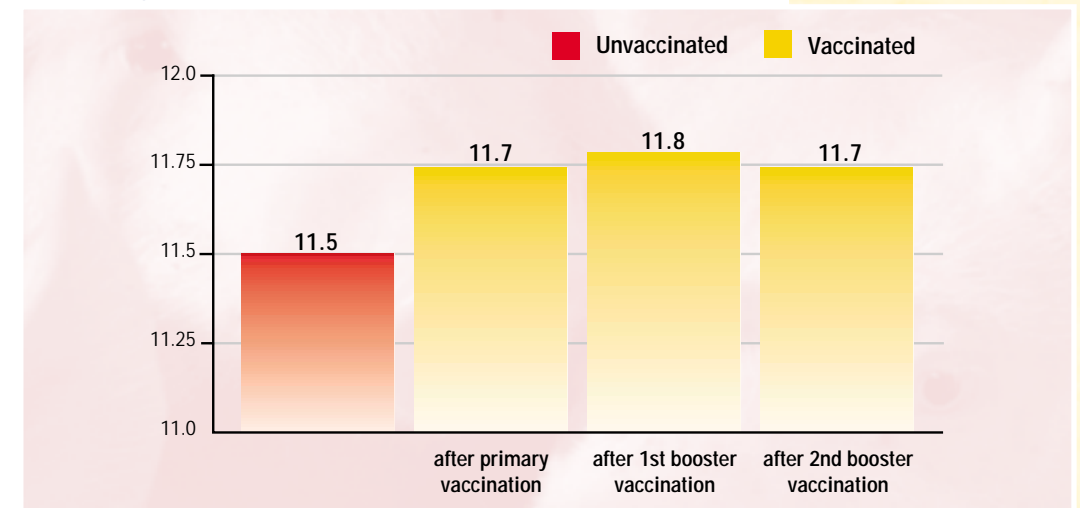
Control of PRRS in UK pig herds has until now consisted mainly of strict hygiene management and class segregation. These measures have provided only partial control and the recent introduction of a live vaccine against PRRS for baby pigs has done nothing to help the reproductive performance of infected herds. Ingelvac PRRS KV is the first vaccine licensed to enhance reproductive performance impaired by infection with the virus.

Boehringer Ingelheim is an internationally respected name in pig health. This product launch heralds the arrival of Boehringer Ingelheim Vetmedica as a fully committed partner to pig producers in the UK.

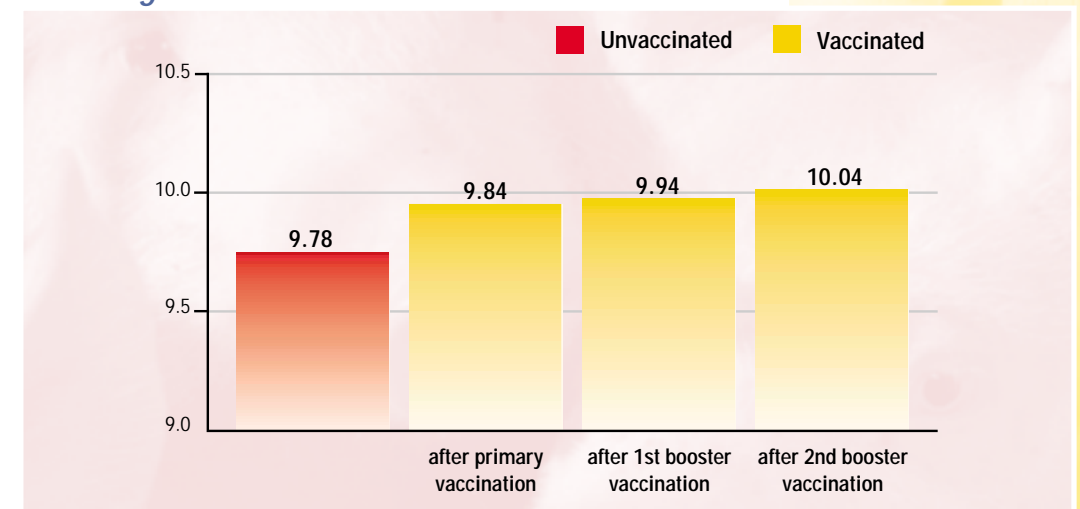


PRRS infected porcine alveolar macrophage

## More Piglets Born Alive per Litter:



## More Piglets Weaned Per Litter:



## Conclusions

- Ingelvac PRRS KV improves reproductive parameters in infected herds by bringing about:
  - An increased number of weaned piglets
  - A reduction in premature farrowings
- Ingelvac PRRS KV is a valuable aid in strengthening and stabilising the immune status of the herd
- It is an aid in the reduction of spread of PRRS virus

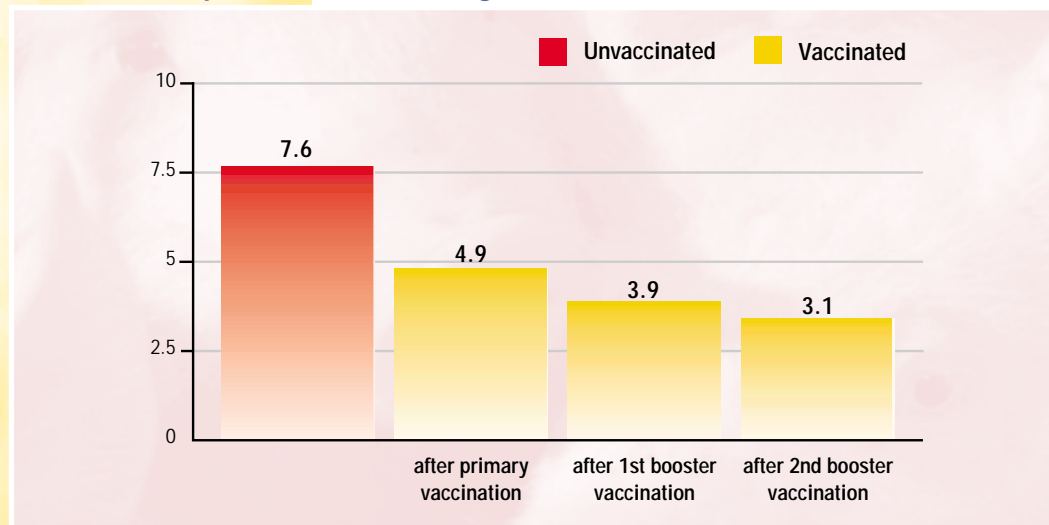
# PRRS: The Disease

The clinical results of the multicentre trial were as follows:

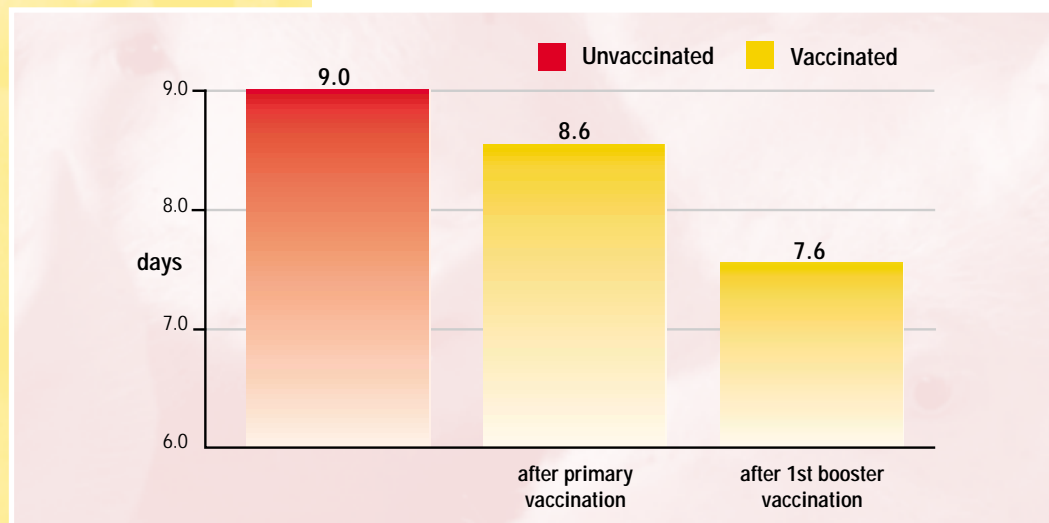
- The number of early farrowings in vaccinated animals was significantly lower compared to control animals
- This figure improved, again significantly, after a booster vaccination
- The weaning to service interval was significantly shorter in the test groups
- The numbers of piglets born alive and weaned per litter were significantly higher in the test groups

## Length of gestation

Reduction of premature farrowings (percentage of gestations <113 days)



Shorter weaning to Service Interval:



## Reproductive loss through PRRS

Acute PRRS in the breeding herd can cause death and resorption of the foetuses when the virus infects them at an early stage of gestation. It is then associated with an early return to oestrus of the sows and reduced farrowing rates.

The virus is especially pathogenic during the second half of gestation: late infection (around day 90) can cause haemorrhagic lesions of the umbilical cord and so lead to abortions, early farrowing (by 3-5 days), an increase in stillbirths, mummies and pre-weaning mortality. It therefore results in a decrease in total births, live births and weaned litter sizes. Furthermore, piglets born to infected animals often show increased susceptibility to secondary infections.

## Respiratory

Suckling and fattening pigs suffer respiratory symptoms and death due to PRRS infection contracted from virus circulating in the herd. Respiratory symptoms are often aggravated by secondary infections, possibly due to impairment of macrophages in the lung.



**'The Blue Eared Pig Disease'**  
The names given to the disease often have some reference to blue ears. One of the early clinical signs included a blue discoloration of the ears.



**'Reproductive PRRS'**  
Reproductive PRRS is associated with abortions, weak and stillborn piglets, early farrowing and a reduction of other reproductive parameters.



**'Secondary Infections'**  
Piglets from infected sows are prone to secondary infections such as *Streptococcus suis*, APP, Enzootic Pneumonia, *Haemophilus parasuis*, etc.



**'Respiratory PRRS'**  
Respiratory PRRS is characterised by difficulty in breathing, eyelid oedema, sneezing, pyrexia, stunted growth and poor food conversion.

# PRRS: Diagnosis

## Clinical Symptoms in the breeding herd:

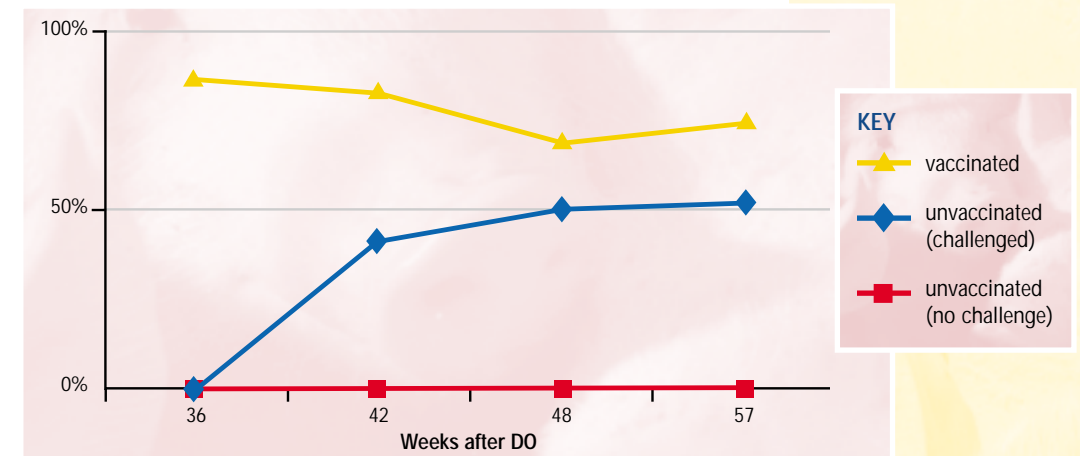
Sows	Boars	Suckling piglets	Weaners and growing piglets
inappetence	lethargy	respiratory embarrassment	respiratory distress
lethargy	depression	delayed development	secondary viral and bacterial infections
fever (1-7 days)	reduction of ejaculate volume	depression	skin changes: blue ears
respiratory distress		palpebral oedema	reduced growth rate
oestrus delay		sneezing	splay-legged piglets
early return to oestrus		conjunctivitis	
abortion (last third of gestation)		rough hair coat	
early farrowing		high mortality	
birth of mummified, dead, weak piglets			

*(Note: the number and the severity of these symptoms can vary greatly, depending on the PRRS status of the farm)*

Not only is PRRS a problem in its own right but there is increasing evidence that it is an important co-factor in the development of Post Weaning Multi-Systemic Wasting Syndrome (PMWS). Co-infections with PRRS Virus and Porcine Circo Virus 2 (PCV<sub>2</sub>) are now thought to be the main causative agents of the syndrome. This has been observed by several different authors and in various countries. Experimental dual infection with both viruses has been shown to potentiate the replication of PCV<sub>2</sub> which could explain the fact that PMWS seems to be clinically more severe in cases of co-infections with PCV<sub>2</sub> and PRRSV compared to infections with PCV<sub>2</sub> alone. PMWS is an increasingly important issue in UK pig herds, quickly spreading and causing significant economic loss.

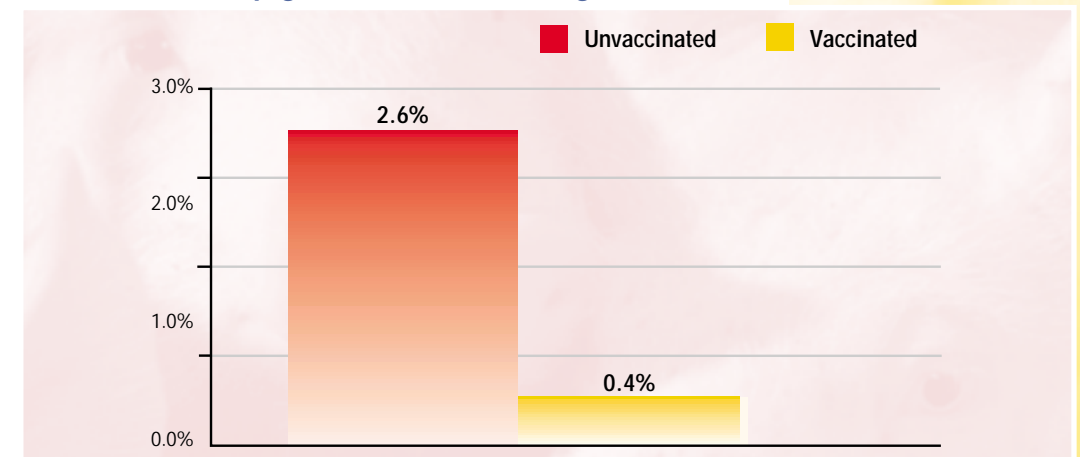
## Absence of Infection of New Gilts

Percentage of gilts with PRRS IPMA antibody titre  $\geq 1.4 \log_{10}$



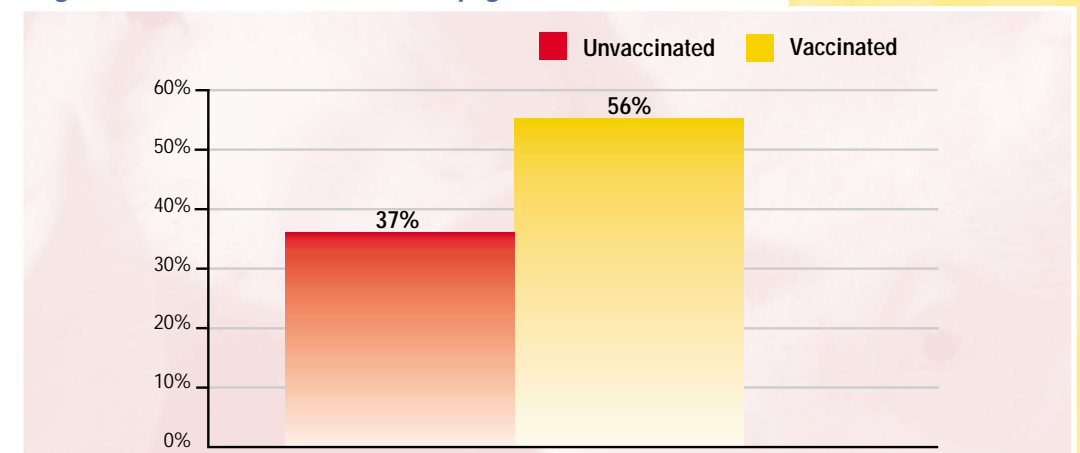
## Fewer Viraemic Piglets:

Fewer viraemic piglets at 4 weeks of age (per treatment group of the dam)



## Better Transfer of Antibodies to piglets:

Significant titre in 4-week-old piglets



## Trial 2

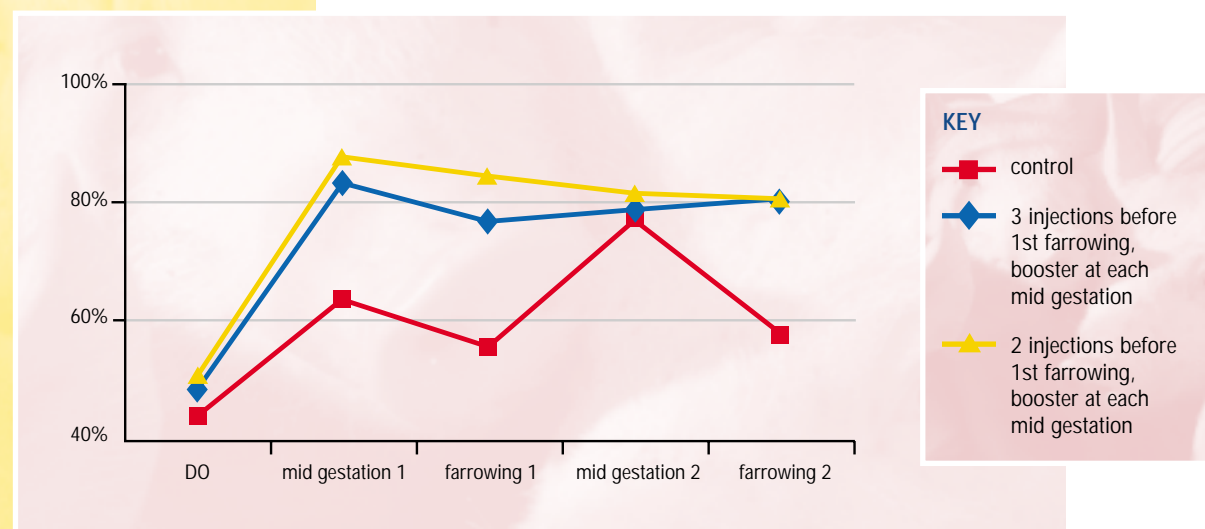
This controlled multicentre trial was carried out in 17 contaminated farms and involved a total of 4880 gilts and sows. Records of the serological development of PRRS antibody-titres as well as clinical results were produced.

The following serological results were observed:

- A strong, homogeneous and lasting seroconversion after vaccination, as demonstrated by IPMA antibody titres in vaccinated animals
- A reduction of PRRS virus circulation in the herd, as shown by the continuous absence of IPMA antibody titres in naive gilts, which were introduced in the farms at mid-trial and which were not contaminated voluntarily
- A significant reduction in the number of viraemic piglets
- Good transfer of passive antibodies to piglets born to vaccinated sows

## Seroconversion After Vaccination

Percentage of animals with PRRS IPMA antibody titre  $\geq 1.4 \log_{10}$



## How to diagnose PRRS?

Different diagnostic tools are available to differentiate PRRS infection from other diseases. A tentative diagnosis is made on the basis of clinical signs such as maternal reproductive failure and respiratory disease in growing pigs. Definitive diagnosis however, requires further diagnostic tests carried out on materials from infected animals.

## Why is it important to test for PRRS?

Many infected herds show clinical signs that are easily confused with other swine diseases. Knowing the herd status is an important aid in determining the most appropriate course of action.

## PRRS FarmCare

As a demonstration of Boehringer Ingelheim Vetmedica's commitment to support the correct use of Ingelvac PRRS KV, we are offering the PRRS FarmCare Programme to facilitate testing in herds where the vaccine is subsequently introduced into the management programme.

Use the PRRS FarmCare order form to obtain a refund for the cost of diagnosis of PRRS in your clients' pigs while ordering Ingelvac PRRS KV. The maximum number of tests that will be refunded is for 10% of sows + 5 piglets less than 5 weeks of age and 5 piglets 5-10 weeks of age.

Testing may be performed by any laboratory but refunds will be provided at the current VLA rate for 10 samples or more. The refund will be given in the form of free Ingelvac PRRS KV.

# Ingelvac® PRRS KV:

## Helping improve reproductive performance

Ingelvac PRRS KV is an inactivated vaccine, derived from the major European PRRS strain. The vaccination strain is cultivated on MA 104 cells and titrated by means of an ELISA assay which specifically detects the encapsulated p 15 protein.

Ingelvac PRRS KV is provided in an oil adjuvant that allows high immunogenicity of the antigen. The inactivation process ensures no residual live virus, eliminating the risk of vaccine virus replication or reversion to virulence.

The vaccine is intended for use in pig production for the reduction of reproductive disorders due to PRRS, and to stabilise the reproductive performance within the framework of preventative measures and hygiene management.

### Vaccination schedule

One dose of 2 ml is to be administered by deep intramuscular route, according to the following vaccination schedule:

#### Primary vaccination:

**Gilts:** Two injections three to four weeks apart, at least three weeks before mating.

**Sows:** Two injections three to four weeks apart (vaccination of all the sows of the herd within a short period is recommended).

#### Revaccination (booster):

One injection at 60-70 days of each pregnancy, starting from the first pregnancy following the primary vaccination.

### Safety

The safety of Ingelvac PRRS KV has been extensively demonstrated under laboratory and field conditions. During field trials, more than 4000 sows and gilts on around 20 farms have been vaccinated with no adverse effects. Ingelvac PRRS KV is a killed vaccine, containing no residual live virus. Swine vaccinated with this vaccine cannot, therefore shed live virus. All PRRSV is inactivated, therefore it cannot revert to a virulent form.

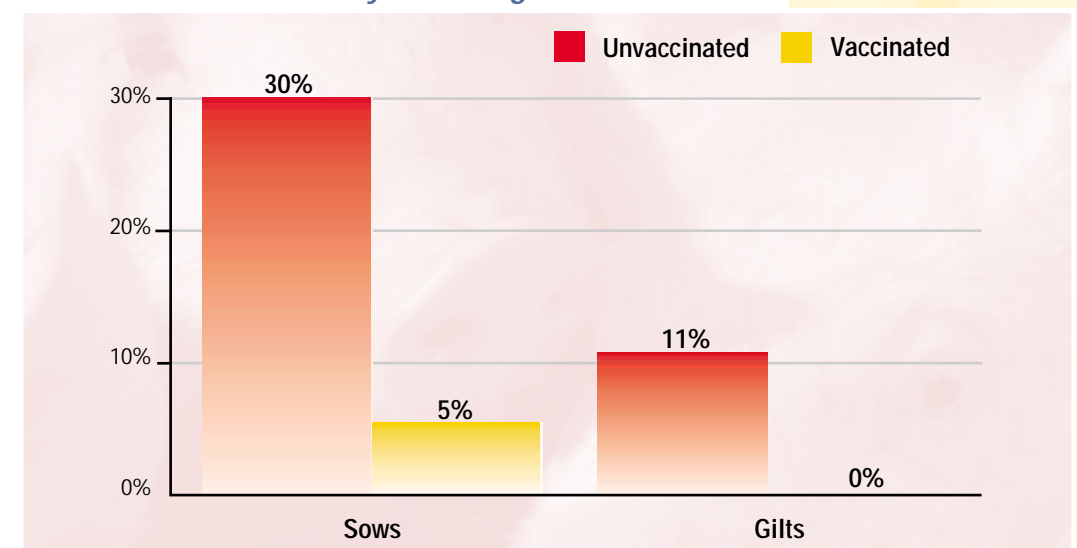
# Clinical Field Studies

### Trial 1

This controlled trial was conducted in four conventional farms contaminated by PRRS virus. Gilts and sows were allocated to test or control groups at random. Sows and gilts in the test group were administered two injections of the vaccine - 3 weeks apart - before breeding and a third injection at mid gestation.

The results of the trial were a significant reduction in early farrowing and the number of stillborn and mummified piglets in sows and gilts (vs. untreated controls).

#### Reduced number of early farrowings



#### Reduced number of stillborn and mummified piglets (per litter)

