Four opportunities to improve your business

Porcilis® PRRS for sows

• Fewer abortions and stillbirths means more piglets born alive per sow \(^{(1,9)}\)
• Healthier, stronger piglets: so less pre-weaning mortality and more weaned piglets per sow \(^{(1,9)}\)
• Less reproductive disease \(^{(1)}\)
• Fewer returns to estrus, and better farrowing rates \(^{(1,9)}\)
THE PRRS VACCINE FOR ALL BREEDING FEMALES

Porcine reproductive and respiratory syndrome, endemic in most pig-producing countries, is one of the biggest problems facing the pig industry. The effects in breeding herds are reproductive failure and signs of respiratory disease.

For gilts and sows:
• A MLV vaccine of proven safety (3,4)
• Inactivated vaccines have shown to be not very efficacious (5), MLV vaccines however have shown efficacy in several trials (1,2,4,9,10,11,12,17)
• European strain demonstrated to protect against heterologous strains (6,7,8,20)
• More pigs born alive per litter (1,9,10,11,12)

For programs to produce PRRSV-free progeny by continuously reducing:
• The number of viremic pigs (19)
• The amount and duration of virus circulation (15)
• Virus shedding (16)
• Infection pressure (19)
• Transmission rates (4,19)

Porcilis® PRRS combined with good management makes regional eradication programs feasible (4,10,13,14,15).

Porcilis® PRRS is far safer than other MLV vaccines (3).
Its transmission ratio* is substantially lower than that of an American strain MLV vaccine(4).

* Transmission ratio (R0): the number of animals that will be infected by a single infected animal.
PORCILIS® PRRS AND PERFORMANCE OF VACCINATED SOWS

A field trial in sows and gilts

In an endemically PRRS virus-infected farm 200 gilts and sows were divided into 2 groups of 100 animals each:

- Group 1: Vaccinated with Porcilis® PRRS
- Group 2: Unvaccinated controls

All health and reproductive parameters were recorded between vaccination and the following weaning.

Results

Several of the recorded parameters were improved after vaccination.

Comparison of fertility parameters in control and vaccinated sows

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Porcilis® PRRS</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culled</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>Farrowing rate</td>
<td>89</td>
<td>70</td>
</tr>
<tr>
<td>Post-partum dysgalactia syndrome</td>
<td>5.6</td>
<td>15.4</td>
</tr>
</tbody>
</table>
PORCILIS® PRRS

Composition
Lyophilisate and solvent for suspension for injection for pigs. Active ingredient: live attenuated PRRS virus strain DV. Adjuvant: dl-α tocopheryl acetate.

Indications for use
For the active immunization of clinically healthy pigs in a PRRS virus-contaminated environment, to reduce viremia caused by the PRRS virus.

Specific claims
For finishing pigs, the effect of the virus on the respiratory system is most relevant. A significant improvement of rearing results (reduced morbidity due to PRRS infection, and a better daily growth and feed conversion) until the end of the fattening period was observed in vaccinated pigs during field trials, particularly in piglets vaccinated at 6 weeks of age. For breeding pigs, the effect of the virus on the reproductive system is most relevant. A significant improvement of the reproductive performance in PRRS virus contaminated environments and a reduction of translupus virus transmission after challenge was observed in vaccinated pigs. The interest of vaccination with Porcilis PRRS lies in obtaining a homogeneous and high immune status against PRRS virus in a herd.

Immunity has been demonstrated via challenge at 28 days post vaccination. A duration of immunity of at least 24 weeks has been demonstrated.

Special precautions for use in animals
Care should be taken to avoid the introduction of the vaccine strain into an area where PRRS virus is not already present. The vaccine virus may spread to pigs in contact during 5 weeks after vaccination. The most common spreading route is via direct contact, but spreading via contaminated objects or via the air cannot be excluded. Care should be taken to avoid spread of vaccine virus from vaccinated animals to unvaccinated animals (e.g.: naïve pregnant sows) that remain free from PRRS virus. Do not use in boars producing semen for seronegative herds, as PRRS virus may be excreted in semen for many weeks.

Special precautions to be taken by the person administering the veterinary medicinal product to animals
In case of accidental self-injection, seek medical advice immediately and show the package leaflet or the label to the physician.

Dosage and administration
Use sterile syringes and needles.
Dosage: Intramuscular injection of 2ml in the neck behind the ear. Intradermal application of 0.2 ml in the skin.

Vaccination scheme:
• In piglets, a single dose from 2 weeks of age onwards
• In gilts, a single dose 2-4 weeks before mating
• In sows, prior to each pregnancy or applied as a herd vaccination with an interval of 4 months

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An opportunity to improve your business

Porcilis® PRRS for piglets
• Better immunity against PRRS results in:
  - healthier lungs (17)
  - improved performance – FCR, ADG and less mortality, so more pigs to market (8,13)
  - fewer concurrent diseases (17)
  - less disease, so less need for antibiotics (17)
**PORCILIS® PRRS AND PERFORMANCE OF FINISHERS FOLLOWING VACCINATION**

Porcine Reproductive and Respiratory Syndrome, endemic in most pig-producing countries, is one of the biggest problems facing the pig industry. Weaned and finishing pigs suffer from respiratory disorders due to secondary infections which are made more serious by the immuno-modulatory properties of the PRRS virus.

![Bar chart showing % of Mortality](image)

**A field trial in finishing pigs**

This field trial was carried out on a 2,500 sow farrow-to-finish herd in which clinical signs of respiratory disease were seen in older growers of 12-14 weeks of age.

- Group 1: 629 pigs vaccinated with Porcilis® PRRS at 6 weeks of age.
- Group 2: 635 unvaccinated pigs.

**Results**

Reduction of mortality in the vaccinated group (60% reduction)

![Graph showing Injections with antibiotics for treatment per day](image)

**Injections with antibiotics for treatment**

There was a substantial reduction in the percentage of animals requiring treatment with injectable antibiotics. The percentage of animals treated by injection in vaccinated and control groups was 23.6 and 59.8, respectively (60% reduction).

![Graph showing Lung Lesions](image)

There were fewer lung lesions due to respiratory disease in vaccinated pigs. (Pleuritis: 80% reduction; Pneumonia: 36% reduction)

**Conclusion**

In this study there was a significant improvement in the overall performance of the finishing herd.
Is homology between the vaccine and the field virus strain relevant?
The efficacy of Porcilis® PRRS against heterologous strains has been proven repeatedly. See below data from CReSA (Spain)\(^{[20]}\).

The viremia in piglets vaccinated with Porcilis® PRRS and challenged with heterologous strains was totally controlled in only 6 days.

Viremia in heterologous challenge of piglets vaccinated with Porcilis® PRRS\(^{[20]}\)
(titer on porcine alveolar macrophages. Lowest detectable titer 20 \(\text{TCID}_{50}/\text{ml}\))

Porcilis® PRRS efficacy against heterologous strain was also demonstrated by Prof. Paolo Martelli\(^{[8]}\):

"In our field study, evidences of EU attenuated vaccine-induced clinical protection against natural exposure to a genetically diverse (84% homology) PRRSV-1 isolate (Italian cluster) was demonstrated by the statistically significant reduction in clinical signs in terms of incidence, duration and severity….."

"Genetic similarity between the infecting strain and the vaccine strain, based on sequencing ORF5 or ORF7, is not predictive of the protection achieved after vaccination" Enric Mateu during PRRS Forum Barcelona 2011\(^{[20]}\).

Genomic homology of ORF5 gene sequence between modified live vaccine virus and PRRS virus challenge isolates is not predictive of vaccine efficacy\(^{[20]}\).

Recent findings indicate that, in terms of protection, the homology of the vaccine and field strains is not particularly relevant\(^{[20]}\).
**WITH PORCILIS® PRRS EARLY PIGLET VACCINATION IS POSSIBLE**

In many herds, PRRSV field infection takes place during the nursery phase. So early vaccination of the piglets, from 2 weeks of age onward, is a demand from the field. The use of diagnostic screening offers an accurate evaluation of field infection profiles, and thus helps in choosing the optimal vaccination schedule.

**Porcilis® PRRS in 2-week-old piglets**

Challenge trial in PRRS maternally derived antibodies positive (MDA+) piglets

- **Group 1:**
  2-week-old piglets vaccinated with Porcilis PRRS by intramuscular administration
- **Group 2:**
  2-week-old piglets vaccinated with Porcilis PRRS by intradermal administration
- **Group 3:**
  2-week-old piglets unvaccinated, kept as negative controls

At 6 weeks of age, all the pigs were challenged with a PRRSV field strain

**Challenge PRRS virus titration from serum**

The virus titers were recorded as log$_{10}$, so the reduction in the virus load in the vaccinated groups, in comparison with the control group, was almost complete. At 5 days post challenge, the reduction in viremia was 97.5%, and by 10 days post challenge it had been reduced further to 99.8%.

**Challenge PRRS virus titration from lung tissue**

In lung tissue, also, the reduction in the challenge PRRS virus in the vaccinated groups was almost complete: 99.2% compared with the controls.

- Minimizes the multiplication of the field strain
- Prepares the immune system to fight the PRRS infection
- Reduces the ability of the PRRS virus to induce clinical signs.

All this results in a lower field virus pressure on the farm, with all the attendant advantages 16.

**…lower field virus pressure, better pig performance…**

**Results**

The efficacy of the vaccination was evaluated by measuring the titers of challenge PRRSV in serum and in the lung.

**Conclusion**

Vaccination of PRRS MDA+ 2-week-old piglets resulted in a highly significant reduction in the level of challenge PRRS virus in the serum and lungs of vaccinated pigs, when compared with controls.
NEEDLE-FREE INTRA-DERMAL VACCINATION, THE FUTURE IS HERE

Intradermal Porcilis® PRRS vaccination (by IDAL) in piglets stimulates dendritic cells in the skin producing an excellent immune response. This was demonstrated by comparing the immune response in intramuscular (IM) and intradermal (ID) vaccinated pigs with unvaccinated pigs, when all three groups received a natural PRRS challenge (8). The results are shown below:

Material and Methods
5-week old pigs were either vaccinated IM or ID with Porcilis® PRRS or left unvaccinated as controls (10 pigs per group). 45 days later they were naturally challenged with an heterologous strain of PRRS virus. Blood samples were collected at regular intervals and blood cells were analyzed.

Conclusions and Discussion
Measurements of cellular immunity were different between vaccinated and control piglets, with the ID group having higher levels of CD3CD8⁺⁺ cells than the IM group (18).

![CD3 CD8⁺⁺ cells in blood](image)