

# PIG PROGRESS

GATEWAY TO THE WORLD OF PIG PRODUCTION



Ileitis vaccine:  
An alternative to antibiotics?



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# Ileitis vaccine: An alternative to antibiotics?

The ongoing trend to reduce antibiotics in pig production has led to the intensification of alternative strategies. Ileitis vaccination has taken flight over the last few years and more interest is to be expected.

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Even when ileitis is not severe, the economic impact might be strong as the pigs do not grow uniformly.

**I**leitis, caused by the intracellular bacterium *Lawsonia intracellularis*, is globally the most common enteric disease in pigs and causes significant economic losses due to reduced weight gain, impaired feed conversion and variable growth of pigs.

Nevertheless, in many regions of the world it is not the focus of producers as clinical signs are not always readily observable. For 15 years a live oral vaccine has been available and has proven in more than half a billion pigs worldwide to be a sustainable solution in the prevention and control of ileitis.

## Fulfilling market needs

In recent years, interest in ileitis vaccination increased due to the public pressure on use of antibiotics in food producing animals. While vaccines are not an alternative to antibiotics as such they can help to reduce the use to what is really needed to treat sick animals. Ileitis vaccination has demonstrated in many cases to lead to a reduction in antibiotic usage, while pig performance and health remain the same or even improve.

Programmes to reduce the use of antibiotics initiated by the authorities in Denmark, the Netherlands and other European countries started a few years ago, which was reflected in a significant increase in vaccine usage. Specifically, ileitis vaccination rates have increased by about 35% in these countries between 2014 and 2015.

Nowadays, a global move and a rising need for alternatives to antibiotics can be noted, to keep pigs healthy. While antibiotic growth promoters were already phased out in Europe years ago, action will be taken now in the US as well. Those products that only have a growth promoting claim will not be allowed beyond 2016. In Asia as well, antibiotic use in food producing animals is starting to be scrutinised.

### Lawsonia intracellularis

Ileitis or porcine proliferative enteropathy (PPE) is an infectious enteric disease caused by *Lawsonia intracellularis*. The organism and disease are present in all swine producing regions around the globe. In other words, *Lawsonia intracellularis* infection is a ubiquitous disease causing huge economic losses worldwide.

*Lawsonia intracellularis* is an obligate intracellular enteric pathogen, which means it grows and multiplies only within the intestinal cells. That makes it different from many other enteric diseases and impacts the way it is controlled.

### Clinical signs and lesions

Ileitis occurs in two clinical forms, as Porcine Intestinal Adenomatosis (PIA) or as Proliferative Haemorrhagic Enteropathy (PHE). PIA is mostly observed in pigs of five to 20 weeks of age, characterised by grey diarrhoea and thickening of the intestinal mucosa. PHE primarily affects older pigs, gilts and boars. Bloody diarrhoea is often accompanied by acute deaths in PHE affected pigs.

Even when the disease is occurring in a mild form, with little or no obvious clinical signs, the economic impact can be enormous due to reduced weight gain, impaired feed conversion and weight variation at slaughter. In addition, when pigs have to be treated for *Lawsonia* with antibiotics this may negatively impact overall gut health and can facilitate infections with other enteric pathogens, e.g. *Salmonella*.

### Diagnostics and control

Diagnostics start with evaluating the disease history on-farm, observing the clinical signs, conducting necropsies and taking the relevant samples. Diagnosis needs to be confirmed by laboratory tests including histology, detection of *Lawsonia intracellularis* antigen in tissue (IHC, PCR) and antibodies in serum (ELISA). While initial outbreaks of the disease might be treated with antibiotics, vaccination provides a more sustainable solution to protect pigs against the impact of ileitis.

### Vaccination

With intestinal diseases, the goal is to build immunity at the site of infection. As *Lawsonia intracellularis* is an intracellular enteric pathogen, local and cellular immunity are most relevant for protection. Live vaccines cause the immune system to react in a way that most closely mimics natural infection, and are able to induce local and cellular immunity. The logical approach for a successful vaccine to control ileitis is therefore an attenuated live vaccine that can be applied orally. That way by doing something as easy as taking a drink, pigs take in vaccine, which is then transported directly to the sites of infection. Some guidelines will help to achieve maximum benefits from vaccination.

### Diagnosis and timing

Before vaccination is implemented presence of the disease needs to be confirmed by a thorough diagnostic investigation. Vaccination is supposed to protect pigs against diarrhoea caused by *Lawsonia intracellularis*, but it does not protect against diarrhoea caused by other pathogens. It is supposed to improve the health situation, but it does not eliminate

*Lawsonia* infection from a farm.

Vaccination should take place at least three weeks before relevant infection or six weeks before the onset of clinical signs.

The easiest, most convenient and efficient way to vaccinate pigs is via water supply. About 80% of users appreciate this stress-free and convenient way of vaccine administration.

The vaccine is dissolved in water and applied to the pigs via the watering system or via the trough.

However, water administration might not be possible in every herd. Every fifth user applies the vaccine via drench which is a suitable alternative in cases when pigs are vaccinated early and water intake is not reliable.

### Avoid concurrent use of antibiotics

With any live bacterial vaccine special care has to be taken that no substances are used around vaccination that might harm the live bacteria contained in the vaccine. Therefore, it is recommended not to use any antibiotics effective against *Lawsonia*, neither in feed or drinking water, nor by injection for at least a week around vaccination (more than three days before, on the day of and more than three days after vaccination). Chlorine, acidifiers or peroxide water treatment should be switched off on the day of vaccination.

### Water quality

In general, not only for applying vaccines, attention should be paid to water quality. While the water does not need to fulfill the strict rules for drinking water for human consumption, quality should be sufficient. A good rule of thumb is: 'If you would refuse to drink the water based on the visual aspect or smell, you should not supply it to your pigs either.' A water stabiliser, like thiosulphate blue or skimmed milk, should be added to avoid interaction with chlorine at common levels in drinking water. In addition, water supply to the pigs should be regularly checked for exceeding chlorine, iron or other possibly harmful substances.

### Benefits of vaccination

The bad news: There is no simple laboratory test to evaluate the success of vaccination, neither detection of antibodies in blood samples nor detection of *Lawsonia* antigen in faeces indicate success or failure of ileitis vaccination. The good news: The success can be estimated by the observable clinical improvement and measurable performance benefits of vaccination. Clinical signs due to *Lawsonia intracellularis* infection are reduced or absent in a properly vaccinated herd. Minimising the negative effects of *Lawsonia intracellularis* will improve the performance of the herd which results in more homogenous growth and less feed needed for the same weight gain. In addition, Ileitis vaccination has demonstrated to help reduce the use of antibiotics. With antibiotics coming under increased scrutiny this is a benefit that should not be underestimated. It is fact that public pressure will continue to push for use of less and less antibiotics in food-producing animals. Therefore, alternative tools are needed to keep pigs healthy, so that treatment with antibiotics is limited to those cases where prevention is not possible. Vaccines can help to achieve what is asked for by the consumer and still ensure that pigs stay healthy and pig production remains profitable.