

Survey uncovers spread of ileitis

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A European wide diagnostic survey revealed that more than 97% of pig breeding herds across Europe are infected with *Lawsonia intracellularis*, the cause of ileitis which can lead to a severely disrupted production and financial performance.

In finishing herds the incidence is as high as 93%, and 40% of farms have pigs that are positive at the end of the nursery period.

Almost 16,000 blood samples were analysed from pigs at different ages and stages of production on 342 pig units in 12 European countries. The results showed that on the infected units, an average 79% of gilts tested positive for the pathogen, 85% of sows and 67% of finishing pigs nearing slaughter weight. A significant factor highlighted was that the percentage of young pigs with a serological positive response to a *Lawsonia intracellularis* infection rose from an average 10% at the end of the nursery period to 25% at their start in the finishing unit. Infection rate increased consistently all the way through to the end of fattening, where two in every three animals were infected with *Lawsonia intracellularis*.

Table 1. Average percentage of positive pigs in European farms.

Country	No of farms tested	Positive pigs (%)*
Switzerland	6	67
Greece	6	57
Italy **	8	57
Denmark	20	55
Czech Republic	6	55
Spain	73	47
Netherlands	10	46
France	54	45
Germany	129	44
Portugal	8	37
United Kingdom	11	34
Belgium	11	32
Average Europe	342	48

*Average percentage of serologically positive blood samples across all tested age groups.

**The average percentage of positive pigs in Italy is influenced by the additional screening of pigs at 35 weeks of age.

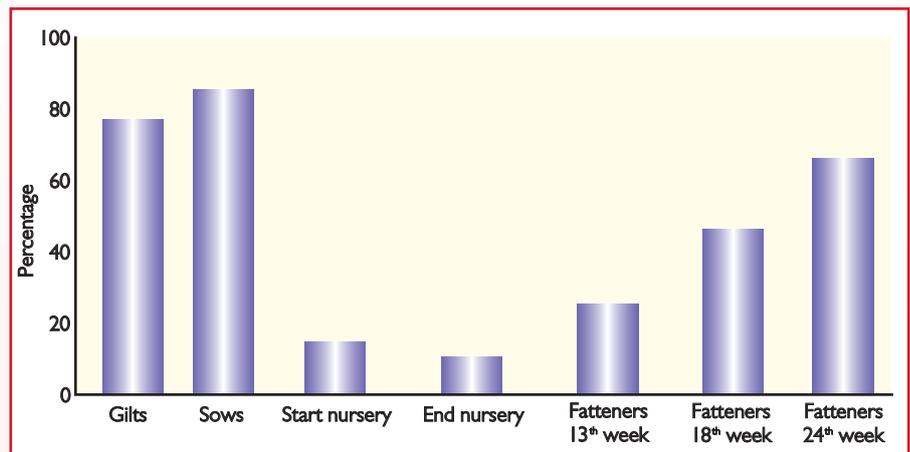


Fig. 1. Average percentage of positive pigs in different age groups (n = 15,997 samples; 342 European farms).

Any signs of suboptimal growth or compromised feed conversion and increased weight variation between the 13th week of life and the day of slaughter will significantly affect the economic results of pig production in Europe.

Although it is well established that ileitis due to *Lawsonia intracellularis* infection is an important enteric disease, there is a surprising lack of comprehensive and comparable epidemiological data.

The development of an easy to use and cost effective blocking ELISA or the detection of antibodies against *Lawsonia intracellularis* opened a realistic way for the broad investigation of the prevalence of *Lawsonia intracellularis* infection in Europe.

This article looks at the diagnostic results of 15,997 blood samples from 342 farms in 12 European countries and the factors influencing the infection patterns.

Survey overview

The study is based on a cross-sectional serological screening of *Lawsonia intracellularis* in farms across Europe during the year 2004/2005. The farms were selected according to the criteria of being typical in size and production system in the respective country. All 15,997 blood samples were analysed in one diagnostic laboratory by using a blocking ELISA (Svanova) for the

detection of antibodies against *Lawsonia intracellularis*.

To be able to analyse differences in the prevalence between age groups the applied profiling scheme included 50 blood samples in total (5 in sows 1st litter; 5 in sows > 1st litter; 5 in piglets at the start of nursery (3rd/5th week); 5 in pigs end of nursery (8th to 10th) week, 10 in fatteners 13th, 18th and 25th week of age each).

Prevalence in Europe

The average European seroprofile showed the highest percentage of positive serum samples in gilts and sows (79 and 85%, respectively). The lowest prevalence was found in piglets at the start and at the end of the nursery (15 and 10%, respectively) (Fig. 1).

Piglets at the start of the nursery (3rd/4th week of age) had consistently more positive serum samples than the ones at the end of the nursery. It is reasonable to assume that a part of these antibodies at the start of the nursery are of maternal origin.

With the start of the fattening period a clear increase in the prevalence from 10 to 25% is found in the average farm seroprofile.

The sero-conversion typically starts between the end of the nursery and the 13th week of life.

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Considering about 2-3 weeks from infection to sero-conversion these pigs are infected in the nursery or shortly after introduction into the fattening units in the majority of European farms.

In the 13th week of age, each 4th pig in Europe is already infected with *Lawsonia intracellularis*. Close to marketing, as much as two out of three animals show a serological positive response.

Any signs of suboptimal growth or compromised feed conversion and increased weight variation between the 13th week of life and the day of slaughter will significantly affect the economic results of pig production in Europe.

Compared to the average percentage of positive pigs within a farm, the average percentage of positive farms is much higher.

In 93 and 97% of all farms in Europe at least one fatter and/or breeding animal was diagnosed to be serologically positive for *Lawsonia intracellularis* antibodies, in fatteners and sows respectively (Fig. 2).

The overall age pattern of prevalence is in good agreement with the percentage of positive pigs within a farm. It is important to note that at the end of the nursery (8th to 10th week) 40% of all European herds are already infected with *Lawsonia intracellularis*.

Compared to the European situation, the average herd in North America seems to reach this point much later. In the United States a herd prevalence of 40% is found between the 15th and the 18th week of life.

This difference in the prevalence pattern points to a much earlier infection in Europe than in the US, which may be partly influenced by the applied antibiotic feeding regimes or/and by differences in production

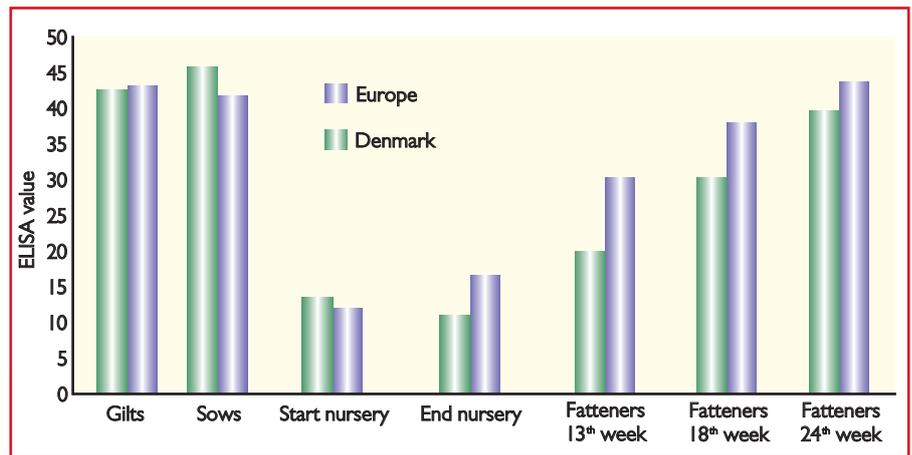


Fig. 3. Comparison of Ileitis ELISA values in Europe and Denmark.

system (higher number of multi site in the US compared to single site production systems in the EU). Nevertheless, this simple figure has important implications for the prevention of Ileitis in Europe.

Country differences

The main pig producing countries in Europe – Germany, Spain, Denmark and France – provided the majority of information for the Ileitis survey. Nevertheless, the comparative farm screenings in other European countries are indicative for the respective situations. There is a very high level of infected pigs and infected farms in Europe without clear geographical preferences of the disease.

Across Europe between 34 and 67% of pigs and 88 and 100% of farms are infected with *Lawsonia intracellularis*. The highest percentage of positive pigs and positive farms are found in Denmark, Switzerland,

Czech Republic, Greece and Italy. Countries with a comparatively low prevalence are Portugal, United Kingdom and Belgium.

Spain, France, Germany and The Netherlands rank in between (Table 1; Fig. 2).

The widespread nature of infection suggests that the disease is endemic on most of the farms. With the majority of pigs not showing obvious diarrhoea, sub-clinical Ileitis as hidden 'background disease' is probably the most frequent appearance of Ileitis in practice. The nature of the disease has been described as 'always around and causing economic trouble (increased feed consumption, slower weight gains and increased building costs), but not always visible'.

It can be hypothesised that common antibiotic feeding practices may have contributed to the sub-clinical presentation of the disease. Here it is interesting to remember that after the complete prohibition of antibiotic growth promoters in Denmark Ileitis was recognised as a clinical problem in many farms without any disease history before the ban.

The comparison of Ileitis ELISA values from Denmark with the average ELISA profile of other European countries revealed that the Danish ELISA values were significantly higher at the end of the nursery as well as in fattening pigs at 13 and 18 weeks of age compared to the European average (Fig. 3).

The infection which triggers such an early seroconversion in Danish farms already takes place in early to mid nursery.

This is in good agreement with investigations where seroconversion in Danish farms was detected as early as six weeks after weaning. Both, the high average Ileitis ELISA values and the early seroconversion are strong indications of the exceptional role of Ileitis in Denmark after the withdrawal of antibiotic growth promoters.

Based on the data generated in the study we are about to derive risk factors for the infection with *Lawsonia intracellularis*. Such information will contribute to identify and prevent the economic losses due to Ileitis.

This will finally enable pigs to fulfill their genetic growth potential better. ■

Fig. 2. Average percentage of positive farms across Europe.

