PORCILIS® Lawsonia

ILEITIS: THE SILENT THIEF

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Regional Technical Director – APSA

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CONTENT

- Background
- The economic impact
- Porcilis Lawsonia
- Field data

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BACKGROUND

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Ileitis – The disease

- Caused by the ***Lawsonia intracellularis*** bacteria, which causes damage to the small intestine.
- **3 FORMS:**
  - **SUBCLINICAL FORM (75% with PIA)**
  - **CHRONIC FORM (PIA)**

FCR/ADG

    - 2 most commonly found form
    - No apparent clinical signs
    - Can reduce Average Daily Gain by 38% and Feed Conversion Rate by 27%
    - **Can cause damage even with the use of antibiotics**

Holtkamp D. *Economic Losses Associated with Ileitis.* MSD Animal Health; Kenilworth, NJ, USA: 2019.

- ACUTE FORM (PHE)

Mortality

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Worldwide Prevalence

Porcine Health Manag. 2019 Dec 17:5:31. doi: 10.1186/s40813-019-0137-6. eCollection 2019.

Prevalence of *Lawsonia intracellularis* in pig herds in different European countries

Mirjam Arnold [1], Annelies Crienen [2], Hanny Swam [2], Stephan von Berg [3], Rika Jolie [4], Heiko Nathues [1]

Affiliations + expand

PMID: 31890255 PMCID: PMC6918559 DOI: 10.1186/s40813-019-0137-6

ORIGINAL RESEARCH article

Front. Vet. Sci., 07 February 2024

Sec. Veterinary Infectious Diseases

Volume 11 - 2024 | https://doi.org/10.3389/fvets.2024.1324768

Fecal PCR survey and genome analysis of *Lawsonia intracellularis* in China

Lei Wang[1,2,3] Wenqing Wu[1,2] Lifeng Zhao[1,2] Zhanwei Zhu[1,2] Xinzhi Yao[4]

Jie Fan[1,2] Hongjian Chen[1,2] Wenbo Song[1,2] Xi Huang[1,2] Lin Hua[1,2]

Ping Qian[1,2] Huanchun Chen[1,2] Zhong Peng[1,2,5] Bin Wu[1,2*]

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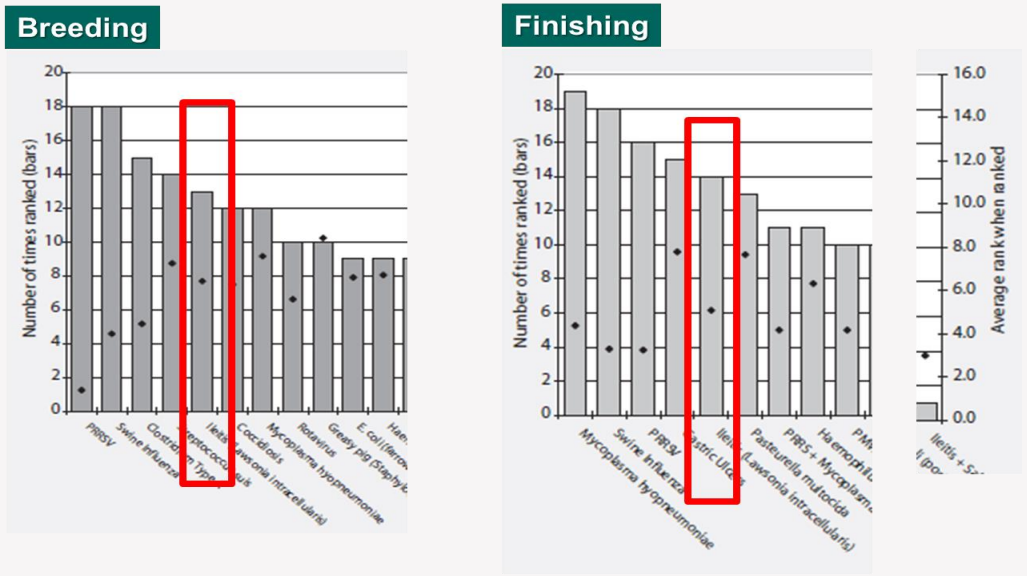
[3] Guangxi YangXiang Co., Ltd., Guigang, China

[4] College of Informatics, Hubei Key Laboratory of Agricultural Bioinformatics, Huazhong Agricultural University, Wuhan, China

[5] Hubei Hongshan Laboratory, Wuhan, China

- Present in all major swine regions around the world and in most farms
- Often masked by antibiotic use



Holtkamp et al. SHAP 2007

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AU PREVALENCE

Australian VETERINARY JOURNAL

PRODUCTION ANIMALS

SHORT CONTRIBUTION

Prevalence of antibodies to *Lawsonia intracellularis* in pig herds in Australia

PK Holyoake,[a]* D Emery,[b] J Gonsalves,[c] M Donahoo[b] and A Collins

Table 2. Predicted within-herd seroprevalence (%) results from ELISA testing for *Lawsonia intracellularis* antibodies, stratified by state and herd size

State	Herd size category (no. of sows)					
	0–99		100–499		500+	
	Predicted mean	SE	Predicted mean	SE	Predicted mean	SE
New South Wales	83.8	10.1	83.8	8.4	80	10.2
Queensland	90.4	5.4	90.3	4.9	88	4.7
South Australia	87.4	7.5	87.3	6.3	84.3	6.5
Victoria/Tasmania	84	8.6	83.9	7	80.1	5.8
Western Australia	75	10.2	74.9	9.7	69.6	9.4

SE, standard error.

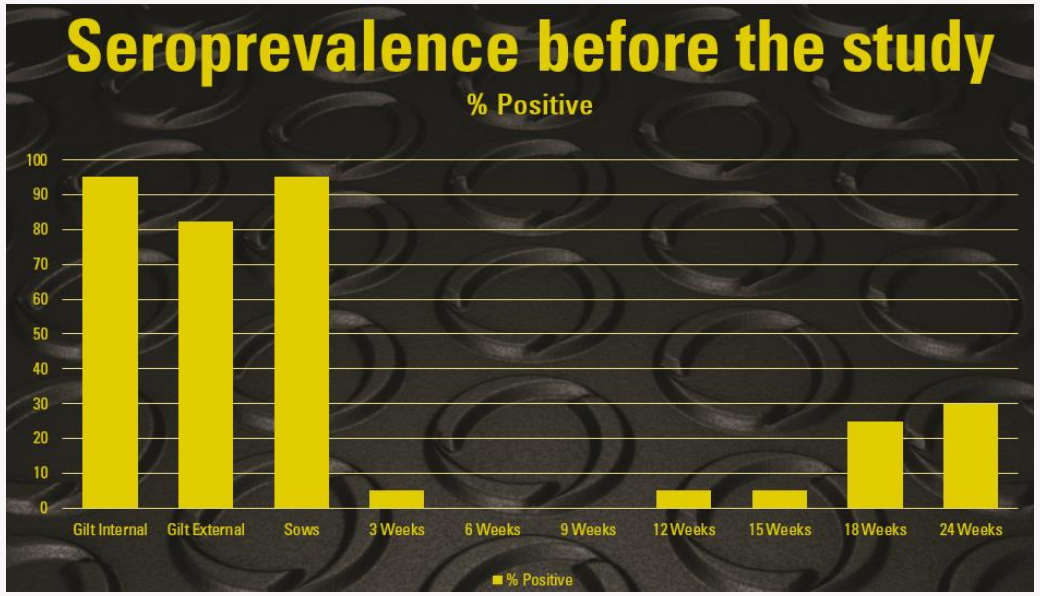
The results of this study confirm that PE is endemic in pig herds in Australia. Recent research suggests that antibiotics are prescribed routinely by veterinarians to control this disease.[13] Results of a study of naturally occurring PE in three herds suggested that clinically normal 10- to 25-week-old grower/finisher pigs were the source of *L. intracellularis* infection for younger weaner pigs and that faecal shedding may occur despite the use of 10 to 100 g/tonne of tylosin or 10 g/tonne of chlortetracycline in the pigs' feed.[14] Our results suggest that medication strategies used in the herds tested allowed infection and therefore seroconversion to *L. intracellularis*. Cost effective strategies to reduce reliance on antibiotics, such as vaccination and/or all-in/all-out pig flow coupled with cleaning and disinfection of pens, are warranted.

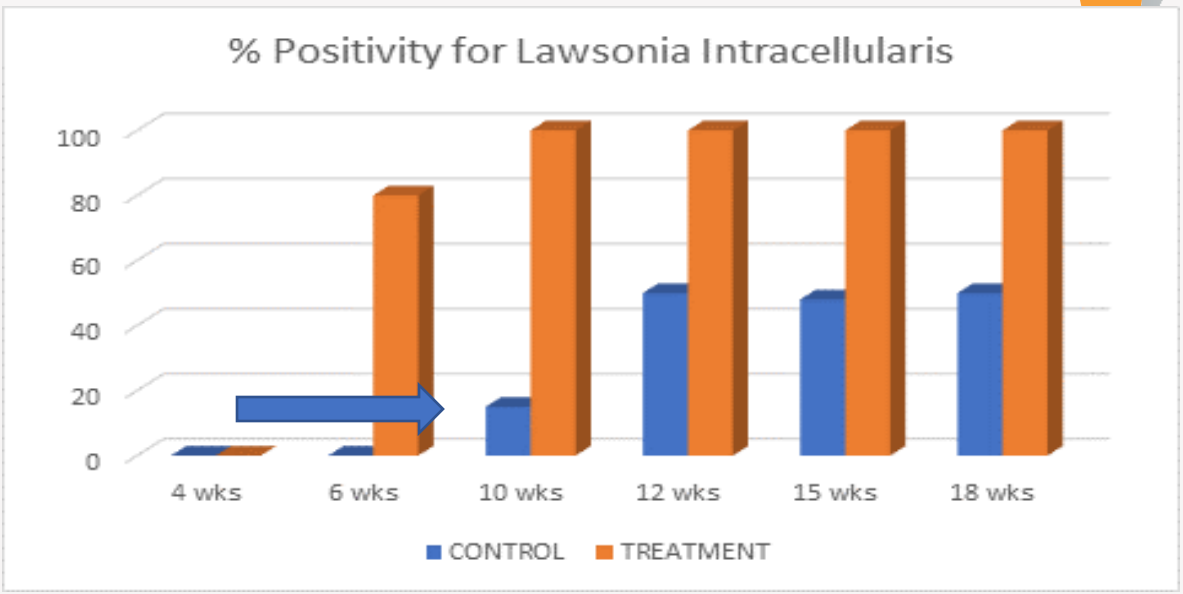
Is Ileitis a problem even if I am using antibiotics?

- Antimicrobial sensitivity shows increasing resistance to commonly used antibiotics
- Tylosin; intermediate activity, chlortetracycline had variable results between low and intermediate activity, as well as spectinomycin, and lincomycin, amoxicillin, sulfamethazine and enrofloxacin.
- *L. intracellularis* was resistant to lincomycin, gentamicin, trimethoprim, colistin and bacitracin
- Poor control of ileitis leads to decreased FCR and ADG

Wattanaphansak, S., Pereira, C.E.R., Kaenson, W. *et al.* Isolation and in vitro antimicrobial susceptibility of porcine *Lawsonia intracellularis* from Brazil and Thailand. *BMC Microbiol* **19**, 27 (2019). https://doi.org/10.1186/s12866-019-1397-7

Is Ileitis a problem even if I am using antibiotics?





Merin, et. al 2019, APVS 2019

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Intramuscular vaccination against *Lawsonia intracellularis* as a tool to reduce antimicrobial consumption A case study

R. Del Pozo Sacristán, L. Belton, S. Carmichael, I. Potter, R. Pearson

	Treatment	Vaccination & Treatment	Vaccination
# batches	*18*	*26*	22
# pigs	*4968*	*7509*	6839
Mortality %	0.90^{A}	0.81^{A}	0.57^{B}
ADG	785	885	845
AM Consumption *(mg/kg)*	64.5	19.3 - 62.3	18.3 - 19.7
Intervention cost *(£/pig)*	1.84	1.30 – 1.81	1.27 – 1.29

ECONOMIC IMPACT OF ILEITIS

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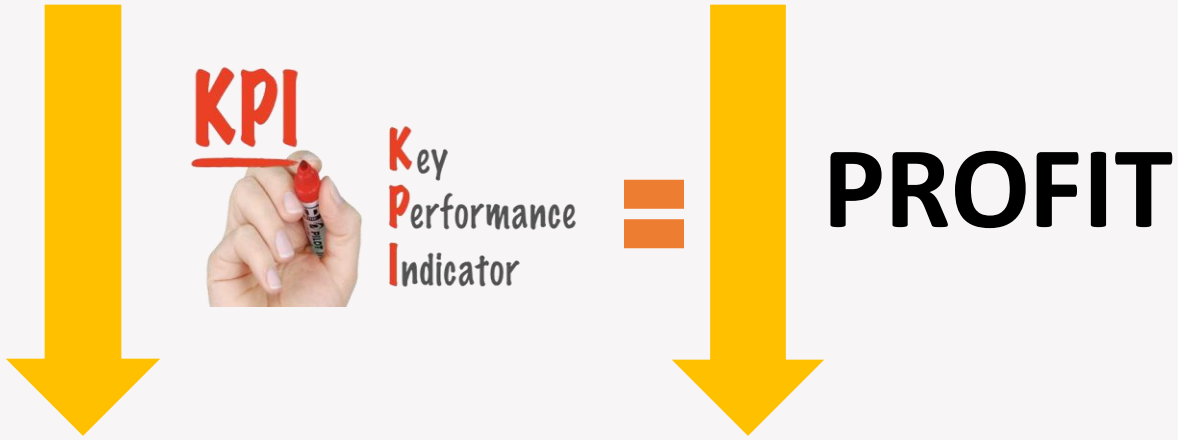
ECONOMIC IMPACT OF ILEITIS

KEY PERFORMANCE INDICATORS

PARAMETER	
MORTALITY	▲
AVERAGE DAILY GAIN	▼
FEED CONVERTION RATIO	▲
GROUP VARIABILITY	▲
DAYS TO MARKET	▲
TREATMENT COST	▲
FACILITY USAGE	▼
BREEDING HERD PERFORMANCE	▼



McOrist 2005; Veenhuizen 2002

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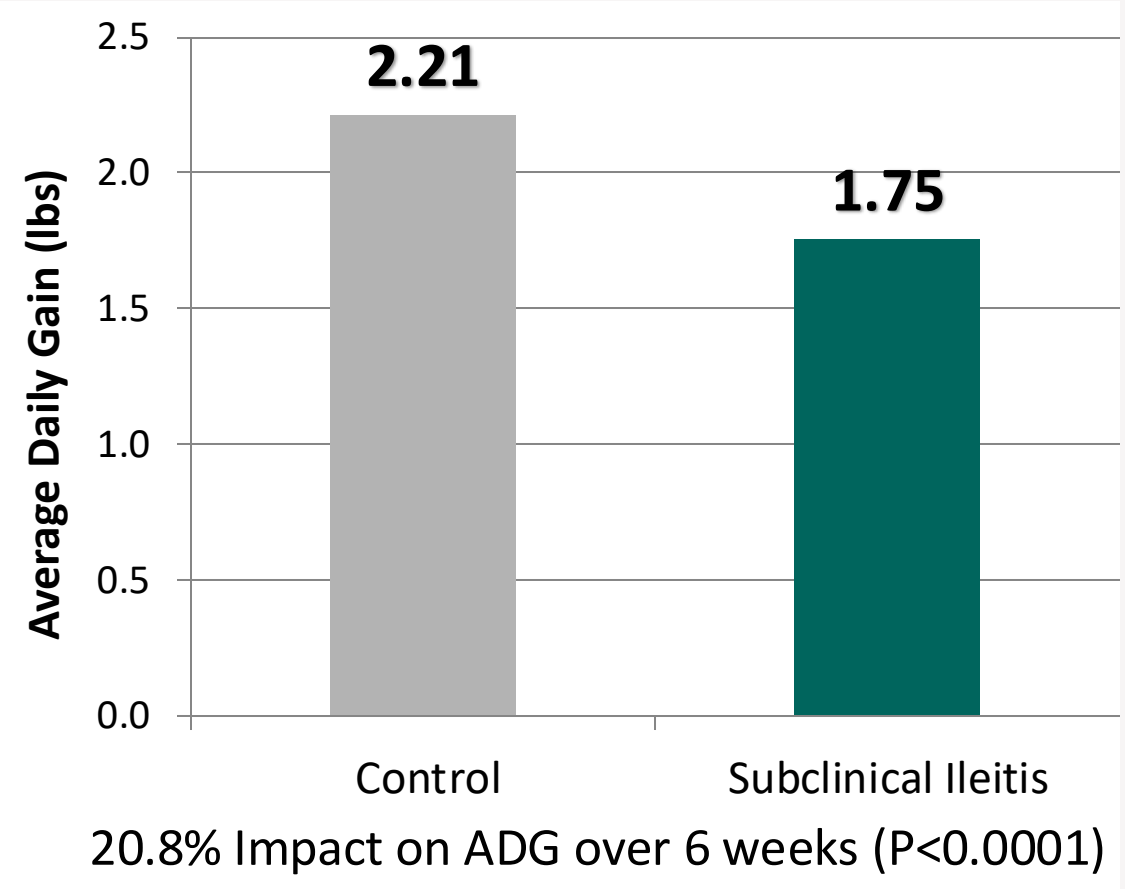
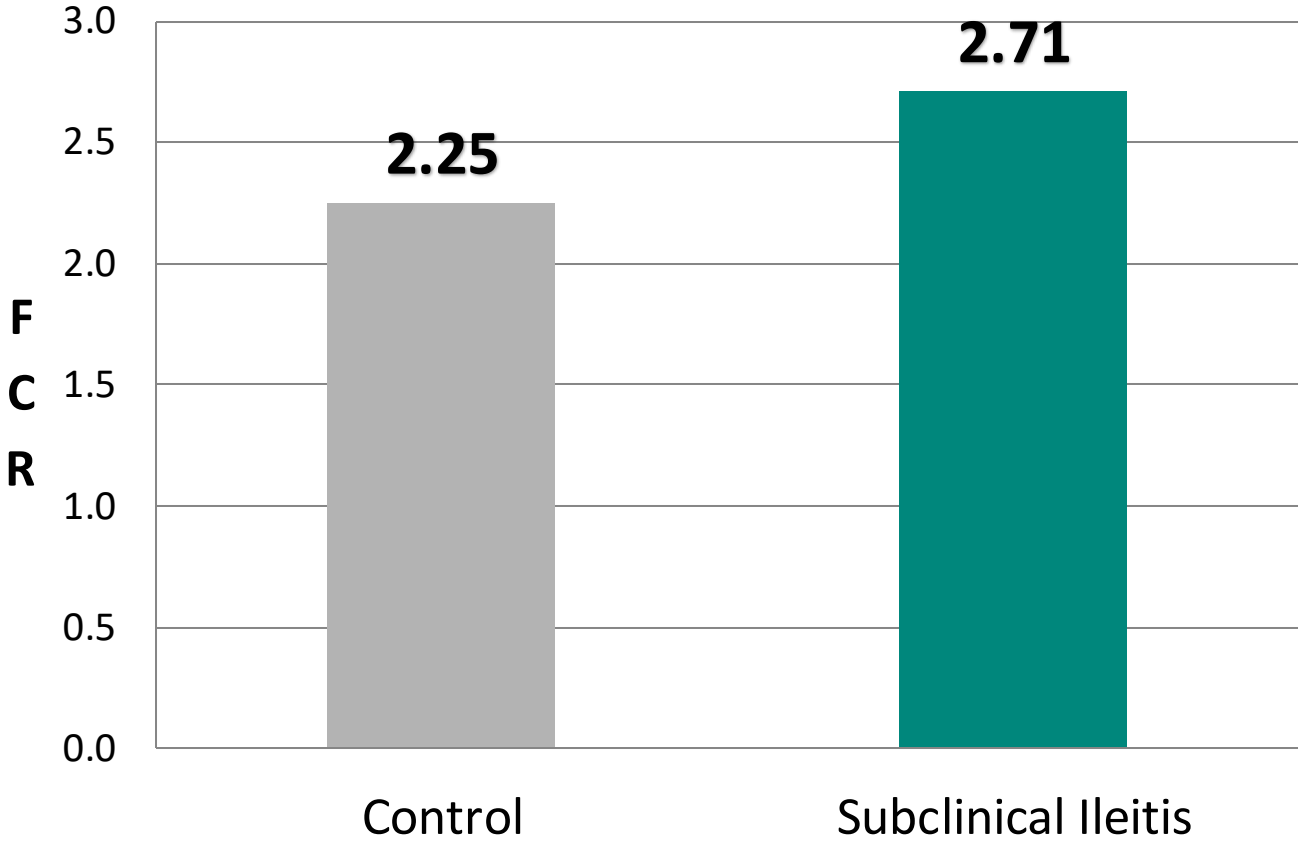
ECONOMIC IMPACT OF ILEITIS – Study 1



20.8% Impact on ADG over 6 weeks (P<0.0001)



20.4% Impact on Feed Efficiency over 6 weeks(P<0.0001)

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Armbruster et al, Proceedings of 44th AASV, 2013

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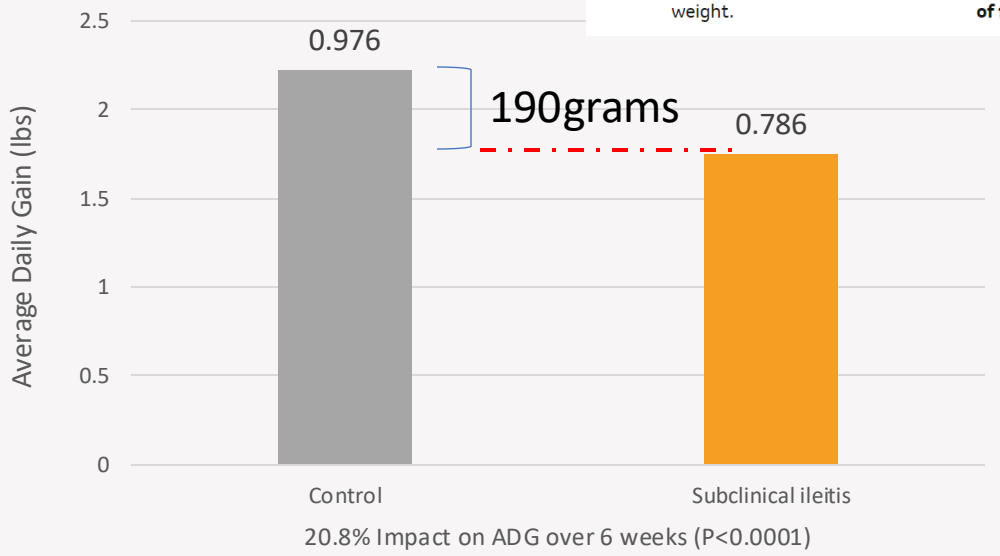
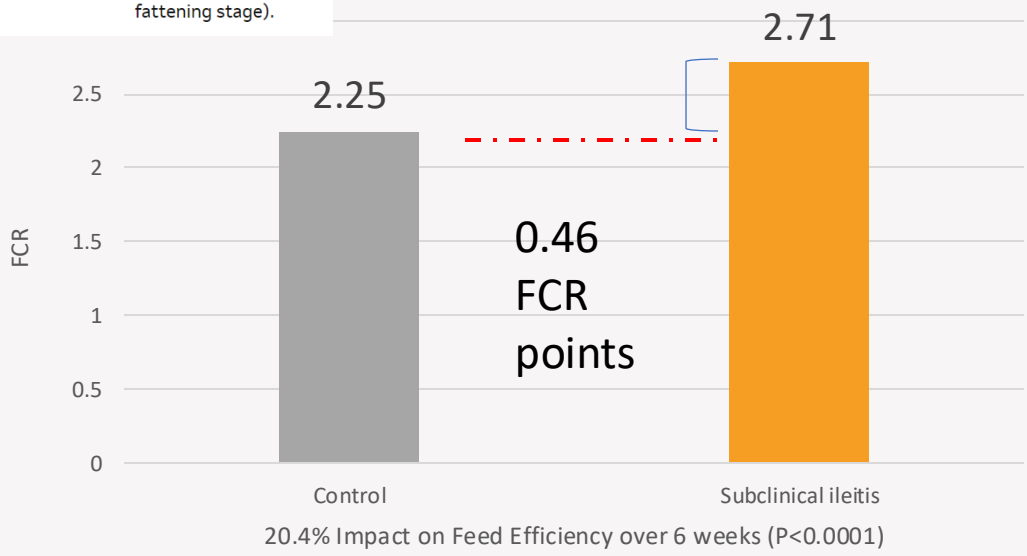
ECONOMIC IMPACT OF ILEITIS – Study 2





Holtkamp D. *Economic Losses Associated with Ileitis.* MSD Animal Health; Kenilworth, NJ, USA: 2019.

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THE SOLUTION

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Porcilis Lawsonia: Intramuscular

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Antigen:

- **Lyophilisate Inactivated Lawsonia intracellularis strain SPAH-08: ≥ 5323 U**

Adjuvant/Diluent:

- **Lawsonia Solvent or Porcilis Lawsonia in PCV M Hyo**

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Porcilis Lawsonia: Intradermal

PORCILIS
Lawsonia

Antigen:

- **Lyophilisate Inactivated Lawsonia intracellularis strain**

  SPAH-08: ≥ 5323 U

Adjuvant/Diluent:

- **Solvent for Porcilis Lawsonia ID**
- **Porcilis PCV IDAL Vaccine**

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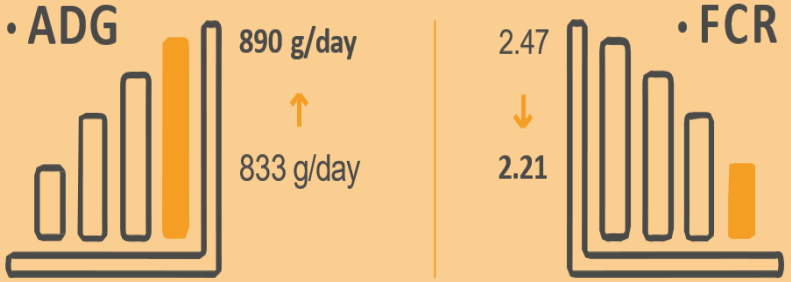
21 weeks of immunity, protecting the pigs throughout the fattening stage.

1 Single Injection

Prevention instead of treatment. It may help in the reduction of antibiotics used to treat Ileitis.

Porcilis® Lawsonia, either as a standalone treatment or used by mixing it with Porcilis® PCV M Hyo, **induced a statistically significant protection against an experimental infection with *Lawsonia intracellularis*.**

Improve key production parameters**



• **Decreased total farm mortality:** from **3.8%** to **2.3%**

It reduces Lawsonia-associated mortality in vaccinated pigs groups to 0%[1]

Jacobs A.A.C. et al. Efficacy of a novel inactivated *Lawsonia intracellularis* vaccine in pigs against experimental infection and under field conditions. Vaccine 37 (2019) 2149–2157.

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Vaccine with flexibility of use:

ONE STEP & GO

- **Ready to use** in a single step.
- There is no need to use water.
- **Each** animal receives the **exact dose** (2 ml).

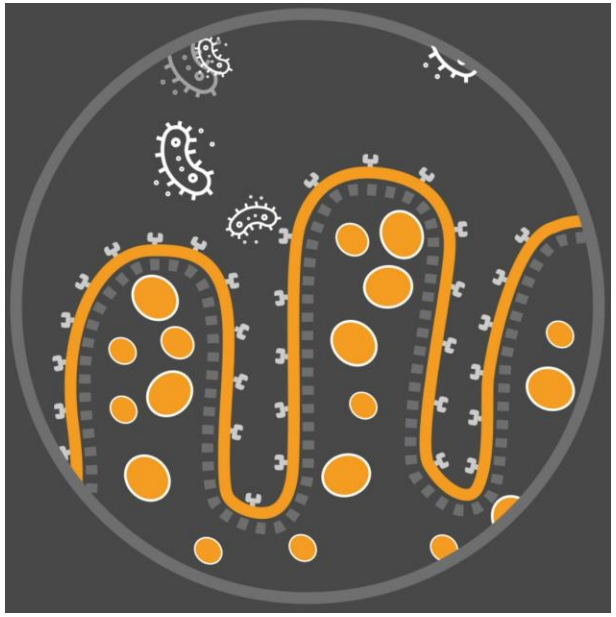
- **Reducing the use of antibiotics.**
- **No interference** with feed, water chlorination, antibiotics, etc.
- It can be reconstituted with **Porcilis PCV M hyo for IM route or Porcilis PCV ID for ID route.**

Does an inactivated vaccine help control ileitis?

LAWSONIA INTRACELLULARIS. IMMUNITY.

1. Adjuvant activates molecules inflammatory process.
2. Release cytokines and chemokines = stimulate migration lymphocytes to injection site.
   - IL-8 - is a pro-inflammatory cytokine, produced by macrophages.
   - MCP-1 - responsible for the migration of monocytes.
   - HMGB-1 - is a cytokine mediator, secreted by macrophages, monocytes and dendritic cells.
   - TNF- alpha - is an inflammatory cytokine, produced by macrophages, monocytes during acute inflammation.
   - IL-1beta - play a central role in the regulation of immune and inflammatory responses.

3. Dendritic cells and Macrophage start phagocytosis and processing of the vaccine antigen.
4. Dendritic cells migrate from injection site to the regional lymph nodes.
5. Presenting soluble vaccine antigen to the B-lymphocytes cells = humoral immunity.
6. Recognizing vaccine antigen epitopes by B-lymphocytes cells, selected and activated.
6. Dendritic cells present vaccine antigen to the T-helper lymphocytes.
7. B-lymphocytes cells undergo second activation by T-helper lymphocytes.
8. B-cells begin to replicate after second activation and produced million clones.
9. Secreting IgG by B-lymphocytes cells.
10. The low-affinity B-lymphocytes cells that fail to recognize vaccine antigen = apoptosis.
11. B-lymphocytes cells with highest affinity produce anti-Lawsonia Intracellularis antibodies.
11. Part of the high affinity B-cells differentiate to the memory cells (14-21 days).
12. Immunoglobulins (Ig) translocate to the intestinal lumen.
13. Ig's will become trap at mucosal surface by the mucin
14. Block Lawsonia Intracellularis to infect the intestinal crypts.



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Does an inactivated vaccine help control ileitis?

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Jacobs et al. (2019). Efficacy of a novel inactivated Lawsonia intracellularis vaccine in pigs against experimental infection and under field conditions. Vaccine 37, 2149–2157

	TRIAL 1 vacc. 4w	TRIAL 2 vacc. 4w	TRIAL 3 vacc. 5w
G1	PL + Solvent 2ml		PL + Porcilis PCV M Hyo 2ml
G2	Oral vaccine 2ml		Oral vaccine x 5w PCV2-M Hyo combo x 3w
G3	Unvaccinated		

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Porcilis® Lawsonia improved clinical scores

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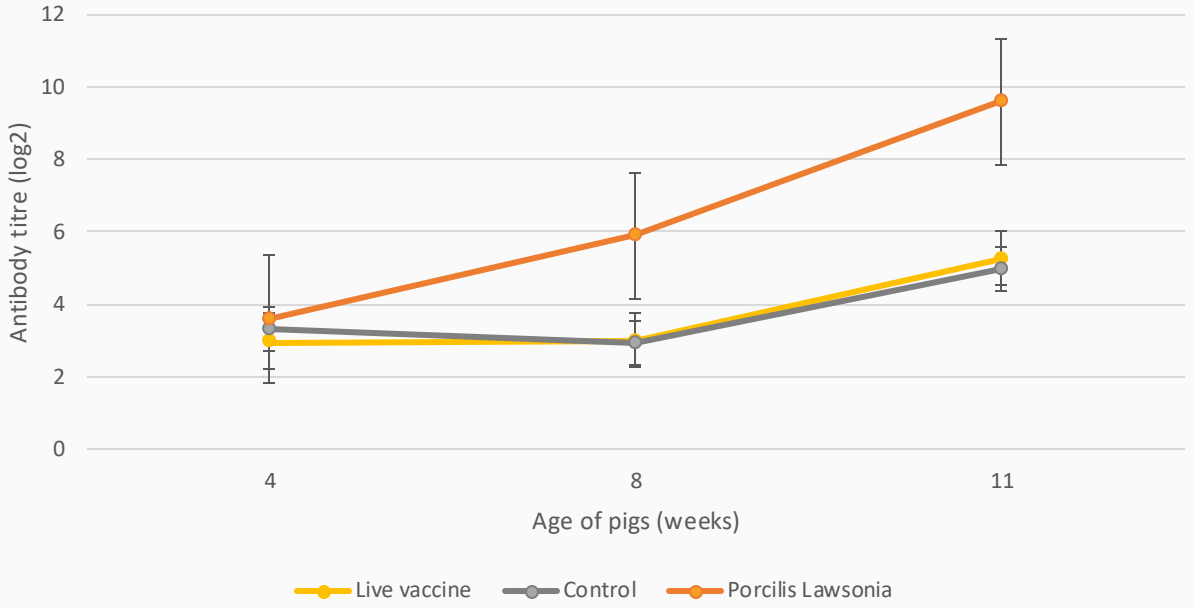
Porcilis® Lawsonia protected against *LI* by:

- Lowering clinical scores;
- Improving weight gain;
- Reducing *LI* shedding;
- Reducing ileum lesion scores.



Jacobs et al. (2019). Efficacy of a novel inactivated Lawsonia intracellularis vaccine in pigs against experimental infection and under field conditions. Vaccine 37, 2149–2157

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Porcilis® Lawsonia improved ADWG

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Results:

- Daily weight gain;
- Clinical scores;
- *Lawsonia intracellularis* shedding;
- Macroscopic as well as microscopic ileum lesion scores.

VACCINE GROUP		AVG CLINICAL score[?]/day 13-20	ADWG g/day / day 13-20	PCR FAECES avg log pg DNA/µ / day 21	PCR MUCOSA avg log pg DNA/µ / day 21
TRIAL 1	PL + Solvent	**0.3 ± 1.2[d]**	**935 ± 306[d,?]**	**0.23 ± 0.64**	**0.18 ± 0.43[?]**
	Oral vaccine	0.9 ± 2.3[?]	655 ± 385	0.60 ± 0.82	0.66 ± 0.84
	Control	4.4 ± 6.5	550 ± 450	0.34 ± 0.62	0.57 ± 0.56
TRIAL 2	PL + Solvent	**3.0 ± 5.5**	**649 ± 751[d,?]**	**0.27 ± 0.54**	**0.71 ± 0.76[d]**
	Oral vaccine	2.8 ± 5.8	-229 ± 1301	0.11 ± 0.38	1.05 ± 0.84
	Control	5.7 ± 5.5	-655 ± 723	0.46 ± 0.70	1.36 ± 0.57
TRIAL 3	PL + PCV M Hyo	**1.5 ± 2.6**	**1012 ± 302[d,?]**	**1.37 ± 1.17[d,?]**	**1.10 ± 0.42**
	Oral vaccine	3.9 ± 4.4[?]	549 ± 597	2.43 ± 0.98	1.10 ± 0.51
	Control	1.0 ± 2.9	537 ± 627	2.47 ± 0.78	1.06 ± 0.49

Jacobs et al. (2019). Efficacy of a novel inactivated Lawsonia intracellularis vaccine in pigs against experimental infection and under field conditions. Vaccine 37, 2149–2157

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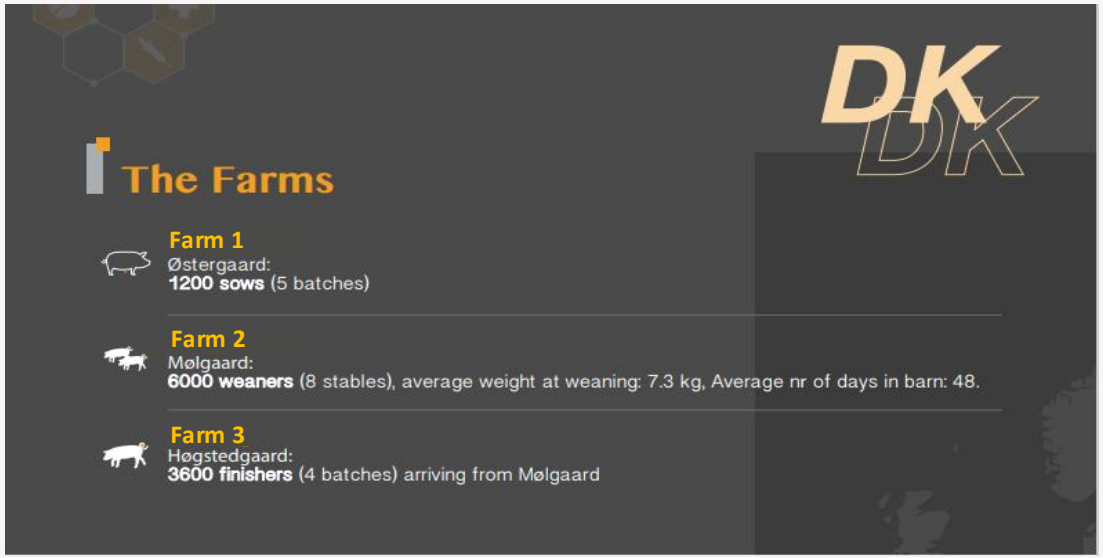
Field Data

PORCILIS® Lawsonia

Field Data



Presented during HQP EU2020, MSD Animal Health

The approach

Moved from oral ileitis vaccination to IM vaccination with Porcilis Lawsonia

In Denmark switching from oral vaccination to IM in weaning pigs gave us:

Increased ADG

+13.26%

Reduced oral medication use in finishing pigs

50% less treatments

75% shorter period to market

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Economic Benefits – Denmark Case

NURSERY-FINISHING

Input		BASE	CHANGE	Encode
Pigs Weaned		26,284	26,284	
Feeds Consumed		5,830,448.30	6,780,311.98	
Weaning Weight		6.4	10.08	
Efficiency				
Wean to Market Mortality		5.00%	5.00%	
Number of pigs Marketd		24,970	24,970	
Market Weight		93.4	108.62	
ADG		0.592	0.670	13.26%
FCR		2.5	2.500	
Market age		147	147.000	
Composite Feed Cost/kg (USD)		0.512	0.51	
Total kilos sold		2,332,179	2,712,125	
Cost	per kg***			
## Feed Cost (USD)	1.28	2,985,189.53	3,471,519.73	
## Labor Cost (USD)	0.17	396,470.48	461,061.21	
## Genetic Cost (USD)	0.03	69,965.38	81,363.74	
## Vaccine/Medicine Cost (USD)	0.06	139,930.76	162,727.49	
## Overhead/Utility Cost (USD)	0.26	606,366.62	705,152.45	
Total Cost (USD)		**4,197,922.78**	**4,881,824.62**	
Sales				
ASP/kg (USD)		1.99	1.99	
Total sales (USD)		**4,641,036.85**	**5,397,128.33**	
Net Income				
		443,114.07	**515,303.71**	**72,189.64**

Per pig marketed $ 2.89

***Based on 2022 MSD Global Benchmarking by Holtkamp (Denmark)

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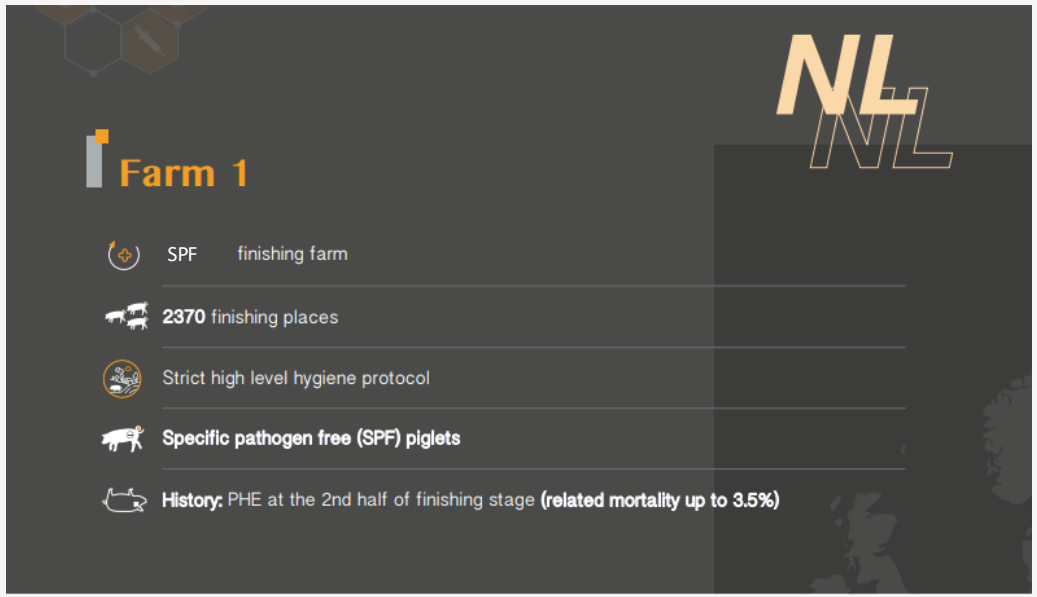
Field Data



Presented during HQP EU2020, MSD Animal Health

The approach

Vaccination with Porcilis Lawsonia in 14 compartments (=921 boars & 819 gilts)
Vaccinated vs non-vaccinated

Results

Increased ADG	Improved FCR	Reduced mortality	Average additional profit
+1.09%	-2.33%	-21.57%	1.90€/pig

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PORCILIS Lawsonia

Economic Benefits – Netherlands Case

NURSERY-FINISHING

Input		BASE	CHANGE	Encode
Pigs Weaned		26,284	26,284	
Feeds Consumed		6,554,572.50	6,540,400.65	
Weaning Weight		7.5	7.5	
Efficiency				
Wean to Market Mortality		5.00%	3.92%	-21.67%
Number of pIgs Marketd		24,970	25,255	
Market Weight		105	106.06	
ADG		0.609	0.616	1.09%
FCR		2.5	2.442	-2.33%
Market age		160	160.000	
Composite Feed Cost/kg (USD)		0.512	0.52	
Total kilos sold		2,621,829	2,678,571	
Cost	per kg***			
## Feed Cost (USD)	1.28	3,355,941.12	3,428,570.83	
## Labor Cost (USD)	0.14	367,056.06	374,999.93	
## Genetic Cost (USD)	0.03	78,654.87	80,357.13	
## Vaccine/Medicine Cost (USD)	0.05	131,091.45	133,928.55	
## Overhead/Utility Cost (USD)	0.26	681,675.54	696,428.45	
Total Cost (USD)		**4,614,419.04**	**4,714,284.89**	
Sales				
ASP/kg (USD)		2.70	2.70	
Total sales (USD)		**7,078,938.30**	**7,232,141.60**	
Net Income				
		2,464,519.26	**2,517,856.70**	**53,337.44**

Per pig marketed $ 2.11

***Based on 2022 MSD Global Benchmarking by Holtkamp (Netherlands)

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Field Data

Comparative trial

VN

2955 heads control

2979 heads vaccinated Porcilis Lawsonia

Seroconversion against lawsonia at 17 weeks and up

Antibiotic treatment maintained

Internal Data, MSD Animal Health, Vietnam

The Approach

Comparative trial simultaneously; one group vaccinated with Porcilis Lawsonia and one group un-vaccinated with treatment regimen maintained.

Results:

	ADG (kg)	Weaning weight (kg)	Transfer weight (kg)	Market weight (kg)	Days of feeding in finishing period (day)
T	0.821 [a]	5.68 [a]	20.95 [a]	108 [a]	106 [a]
C	0.772 [b]	6.18 [b]	22.04 [b]	107 [b]	110 [b]

6% improvement in ADG, 1% in market weight

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Economic Benefit – Vietnam Case

NURSERY-FINISHING

Input		BASE	CHANGE	Encode
Pigs Weaned		26,284	26,284	
Feeds Consumed		6,554,572.50	6,919,755.83	
Weaning Weight		7.5	7.5	
Efficiency				
Wean to Market Mortality		5.00%	5.00%	
Number of pIgs Marketd		24,970	24,970	
Market Weight		105	110.85	
ADG		0.609	0.646	6.00%
FCR		2.5	2.500	
Market age		160	160.000	
Composite Feed Cost/kg (USD)		0.88	0.88	
Total kilos sold		2,621,829	2,767,902	
Cost	per kg***			
## Feed Cost (USD)	2.2	5,768,023.80	6,089,385.13	
## Labor Cost (USD)	0.08	209,746.32	221,432.19	
## Genetic Cost (USD)	0.06	157,309.74	166,074.14	
## Vaccine/Medicine Cost (USD)	0.12	314,619.48	332,148.28	
## Overhead/Utility Cost (USD)	0.52	1,363,351.08	1,439,309.21	
Total Cost (USD)		**7,813,050.42**	**8,248,348.94**	
Sales				
ASP/kg (USD)		3.19	3.19	
Total sales (USD)		**8,363,634.51**	**8,829,608.43**	
Net Income				
		550,584.09	**581,259.49**	**30,675.40**

Per pig marketed $ 1.23

***Based on 2022 MSD Global Benchmarking by Holtkamp (Vietnam)

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PORCILIS Lawsonia

Field Data

Farrow to Finish Farm

PH

700 sow level

16100 finishers annually

Suffering diarrhea in the late finishers

Farm wants to try Lawsonia vaccine

The Approach

Comparative trial simultaneously; one group vaccinated with Porcilis Lawsonia and one group un vaccinated.

Results:

	ADG (kg)	Weaning weight (kg)	Transfer weight (kg)	Market weight (kg)	Days of feeding in finishing period (day)
T	0.540 [a]	7.59 [a]	36.36 [a]	73.98 [a]	137 [a]
C	0.497 [b]	7.39 [a]	31.16 [b]	68.09 [b]	137 [a]

9% improvement in ADG, 10% in FCR

Ellerma, et. al, IPVS ESPHM Proceedings 2024

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PORCILIS Lawsonia

Economic Benefit – PH Case

NURSERY-FINISHING

Input		BASE	CHANGE	Encode
Pigs Weaned		26,284	26,284	
Feeds Consumed		6,554,572.50	7,102,347.49	
Weaning Weight		7.5	7.5	
Efficiency				
Wean to Market Mortality		5.00%	5.00%	
Number of pigs Marketd		24,970	24,970	
Market Weight		105	113.78	
ADG		0.609	0.664	9.00%
FCR		2.5	2.500	
Market age		160	160.000	
Composite Feed Cost/kg (USD)		0.88	0.88	
Total kilos sold		2,621,829	2,840,939	
Cost	per kg***			
## Feed Cost (USD)	2.2	5,768,023.80	6,250,065.79	
## Labor Cost (USD)	0.08	209,746.32	227,275.12	
## Genetic Cost (USD)	0.06	157,309.74	170,456.34	
## Vaccine/Medicine Cost (USD)	0.12	314,619.48	340,912.68	
## Overhead/Utility Cost (USD)	0.52	1,363,351.08	1,477,288.28	
Total Cost (USD)		**7,813,050.42**	**8,465,998.21**	
Sales				
ASP/kg (USD)		3.19	3.19	
Total sales (USD)		**8,363,634.51**	**9,062,595.39**	
Net Income				
		550,584.09	**596,597.19**	**46,013.10**

Per pig marketed $ 1.84

***Based on 2022 MSD Global Benchmarking by Holtkamp (Vietnam)

MSD Animal Health

PORCILIS Lawsonia

Field Data

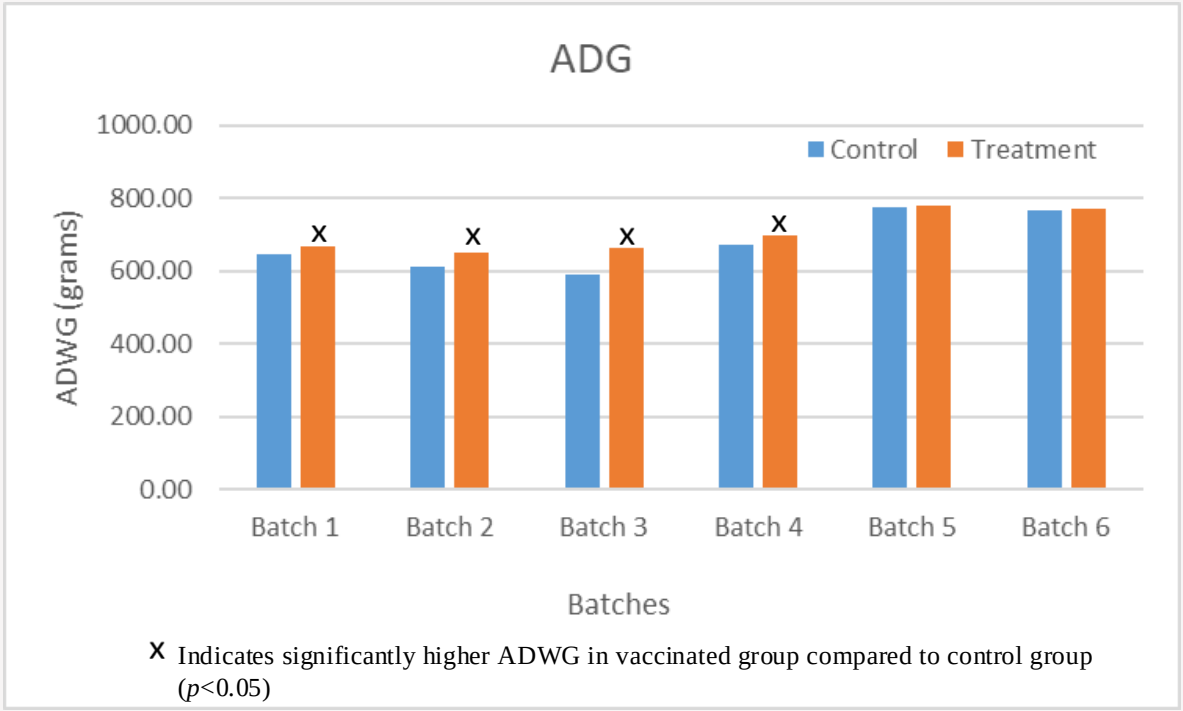
Soon to be published Internal Data

KR

6 batches; vaccinated on different time points
Batch 1-3 @ 3week of age; Batch 4 @ 6 weeks of age; Batch 5 and 6 @ 7 weeks of age

Total of 27-30 heads per batch with 10 heads control

Weight recorded at start and at 24 weeks of age



Internal Data, MSD Animal Health, South Korea

Batch 1 – 21 grams adwg difference from control
Batch 2 - 40 grams adwg difference from control
Batch 3 – 70 grams adwg difference from control
Batch 4 – 27 grams adwg difference from control

MSD Animal Health

PORCILIS Lawsonia

Economic Benefit – KR Case

NURSERY-FINISHING

Input		BASE	CHANGE	Encode
Pigs Weaned		26,284	26,284	
Feeds Consumed		6,554,572.50	6,757,249.25	
Weaning Weight		7.5	7.5	
Efficiency				
Wean to Market Mortality		5.00%	5.00%	
Number of pIgs Marketd		24,970	24,970	
Market Weight		105	108.25	
ADG		0.609	0.630	3.33%
FCR		2.5	2.500	
Market age		160	160.000	
Composite Feed Cost/kg (USD)		0.848	0.85	
Total kilos sold		2,621,829	2,702,900	
Cost	per kg***			
## Feed Cost (USD)	2.12	5,558,277.48	5,730,147.36	
## Labor Cost (USD)	0.25	655,457.25	675,724.92	
## Genetic Cost (USD)	0.13	340,837.77	351,376.96	
## Vaccine/Medicine Cost (USD)	0.28	734,112.12	756,811.92	
## Overhead/Utility Cost (USD)	0.74	1,940,153.46	2,000,145.78	
Total Cost (USD)		**9,228,838.08**	**9,514,206.94**	
Sales				
ASP/kg (USD)		3.96	3.96	
Total sales (USD)		**10,382,442.84**	**10,703,482.80**	
Net Income				
		1,153,604.76	**1,189,275.87**	**35,671.11**

Per pig marketed $ 1.43

***Based on 2022 MSD Global Benchmarking by Holtkamp (Korea)

NURSERY-FINISHING

Input		BASE	CHANGE	Encode
Pigs Weaned		26,284	26,284	
Feeds Consumed		6,554,572.50	7,279,461.40	
Weaning Weight		7.5	7.5	
Efficiency				
Wean to Market Mortality		5.00%	5.00%	
Number of pIgs Marketd		24,970	24,970	
Market Weight		105	116.61	
ADG		0.609	0.682	11.91%
FCR		2.5	2.500	
Market age		160	160.000	
Composite Feed Cost/kg (USD)		0.848	0.85	
Total kilos sold		2,621,829	2,911,785	
Cost	per kg***			
## Feed Cost (USD)	2.12	5,558,277.48	6,172,983.27	
## Labor Cost (USD)	0.25	655,457.25	727,946.14	
## Genetic Cost (USD)	0.13	340,837.77	378,531.99	
## Vaccine/Medicine Cost (USD)	0.28	734,112.12	815,299.68	
## Overhead/Utility Cost (USD)	0.74	1,940,153.46	2,154,720.57	
Total Cost (USD)		**9,228,838.08**	**10,249,481.65**	
Sales				
ASP/kg (USD)		3.96	3.96	
Total sales (USD)		**10,382,442.84**	**11,530,666.86**	
Net Income				
		1,153,604.76	**1,281,185.21**	**127,580.45**

Per pig marketed $ 5.11

***Based on 2022 MSD Global Benchmarking by Holtkamp (Korea)

MSD Animal Health

PORCILIS Lawsonia

Take home message

- Every kilo counts
- Ileitis impacts your profitability without you knowing “Silent Thief”
- Porcilis Lawsonia is a tool to help improve KPI (ADG, Mortality, FCR) and can help boost farm profitability

THANK YOU

QUESTIONS?

MSD Animal Health

PORCILIS Lawsonia