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## **Salmonella and parasites in French alternative pig farms: first results in 65 herds**

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## BACKGROUND & AIM

Pig farms on litter or with outdoor access (runs, free-range) are widely popular with consumers and citizens, particularly for reasons of animal welfare<sup>1</sup>. However, these alternative farms have their critical points.



This study is part of a large research project (PIGAL) jointly studying animal health, biosecurity, animal welfare and veterinary public health in alternative pig farms. **It aims to assess *Salmonella* shedding by growing and finishing pigs and their level of parasitism.**

## MATERIAL & METHODS

The study is conducted in 65 alternative pig farms (size > 100 pigs), in continental France. Factors concerning the farm structure, management and husbandry are recorded and observations of the animals are made.

### Samples:

- Faeces from 10 growers (10-12 weeks old) and 10 finishers (≥22 weeks old)

### Laboratory analyses:

- Detection of *Salmonella* with a four-step protocol adapted from the NF-U47-102 standard.
- Serotyping by agglutination following the ISO/TR 6579-3.
- Coprology (McMaster technique using saturated NaCl as a flotation fluid)



## RESULTS

### Farm description:

- 52 farrow-to-finish and 13 wean-to-finish.
- 66.2% of the herds were organic.
- 23.1% were involved in the French quality program 'Label Rouge'.
- 10.7% were involved in other French quality scheme, brands or trademarks.
- Growers and finishers had outdoor access in 36.9% and 56.9% of the herds respectively.

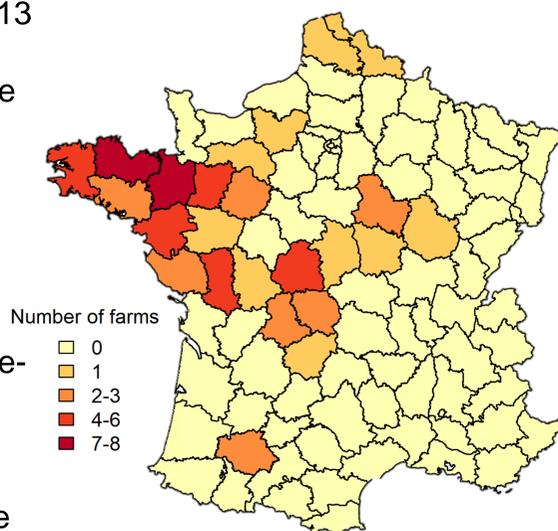


Figure 1: Distribution of farms

## CONCLUSIONS

These findings show that parasitism and *Salmonella* shedding are frequently encountered in alternative pig farms. Identifying herd-factors associated with these two infections may help optimise herd health management programs and food safety. This is one of the aims of the PIGAL research project, whose on-farm investigation was completed at the end of February 2022.

## RESULTS

In 15.4% of the herds neither *Salmonella* nor parasites were detected.

### *Salmonella*:

*Salmonella* was detected in 35.4% of the herds; 26.2% of the herds were positive at the growing step, 29.2% at the finishing step and 20% at the two steps (Figure 2). On the 1300 samples of faeces, 14.0% were *Salmonella* positive, 14.0% at the growing step and 14.0% at the finishing step. Ten serotypes were found in positive samples (Figure 3).

Figure 2: Number of positive pigs per stage for the 23 positive farms

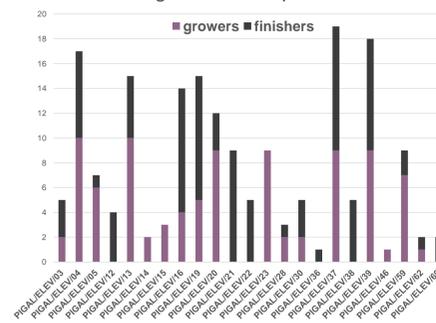
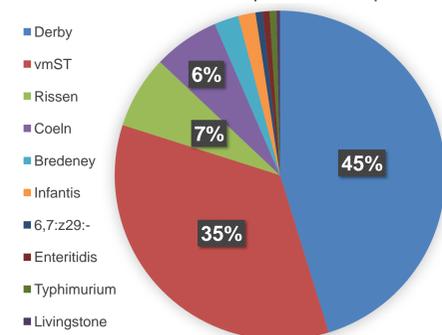


Figure 3: Frequency of serovars in positive samples



### Coprology:

Parasites were detected in 73.8% of the herds; 52.3%, 63.1% and 41.5% of the herds were positive at the growing, finishing and at the two steps respectively.

Parasites were detected in 23.8% and 38.9% of the faeces at the growing and finishing pigs respectively.

Oocysts of coccidia were found in 22.7% of faeces (mean=6 999 eggs/g,  $\sigma$ =143 888).

*Oesophagostomum dentatum* / *Hyostrongylus rubidus*, *Trichuris suis* and *Ascaris suum* eggs were quantified in 8.5%, 5.0% and 1.7% of faeces respectively (mean=976 eggs/g  $\sigma$ =1 540; mean=266 eggs/g  $\sigma$ =312 and mean=1 713 eggs/g  $\sigma$ =2 507 respectively) and in 30.8%, 33.8%, 13.8% of farms respectively. More details in table 1 and figures 4-5.

Table 1: Percentage of infested faeces according to parasite and physiological stage

	Faeces positive (%)	
	Growers	Finishers
Oocysts of coccidia	14.2	31.2
<i>Oesophagostomum dentatum</i> / <i>Hyostrongylus rubidus</i> eggs	7.1	10.0
<i>Trichuris suis</i> eggs	5.1	4.9
<i>Ascaris suum</i> eggs	0.5	2.9

Figure 4: Rate of helminth-infested farms by physiological stage

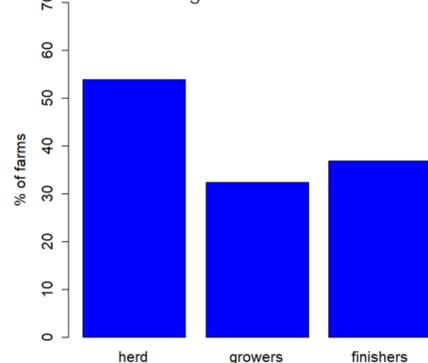
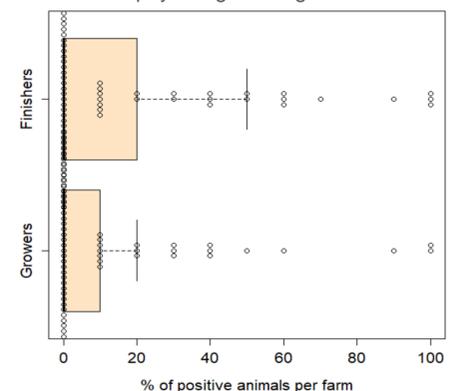


Figure 5: Percentage of helminth-infested animals per farm and per physiological stage



<sup>1</sup> DELSART M., POL F., DUFOUR B., ROSE N., FABLET C. (2020) Pig Farming in Alternative Systems: Strengths and Challenges in Terms of Animal Welfare, Biosecurity, Animal Health and Pork Safety. *Agriculture* 10(7), 261