

# Evaluation of Porcine Epidemic Diarrhea virus (PEDV) seroprevalence in France in 2018

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## Objectives

In France, four cases of porcine epidemic diarrhea (PED) were detected from 2014 to 2017 caused by moderate pathogenic “S-InDel” PEDV strains. PED is notifiable in France and no case caused by “S-non-InDel” PEDV strains that are highly pathogenic have been reported to date.

A national serological survey was implemented in 2018 to assess the PEDV prevalence in order to evaluate if PEDV strains have been circulating without evidence of clinical signs on animals in herds.

## Materials and methods

- Blood samples were collected from 540 farms representative of the french pig production, stratified on farm type and region;
- 10 animals were sampled in each farm: sows in farrowing farms, weaned piglets in farrowing-post-weaning or post-weaning farms, fattening pigs in farrowing-finishing or finishing farms;
- No PED typical clinical signs were reported in farms at the time of sampling;
- Each serum was analyzed with the ELISA IDScreen® PEDV Spike Competition kit (PEDV ELISA) (specificity: 99.4%, sensitivity: 90%);
- Sera which tested positive with PEDV ELISA (S/N < 50%) were analyzed a second time with the same kit (PEDV ELISA repetition) and by IPMA.

## Results and discussion

- 0.7% (37 / 5 399) of the sera analyzed with PEDV ELISA tested positive, which is close to the risk of false positives linked to the test specificity;
- 5.9% (32 / 540) of the farms had one or more (3 maximum for two herds) sera positive with PEDV ELISA (Table 1). In all these cases, either only one serum per farm was positive or the results obtained with other tests (PEDV ELISA repetition and IPMA) did not allow to conclude on the positivity (discordant results or close to the cut-off of the test or low titres);
- Given the high contagiousness of PED, in an infected herd and without specific measures to eradicate the virus, we could expect to detect many positive sera with results concordant between tests and far from the cut-off.

Herd nb	Serum nb	PEDV ELISA		PEDV ELISA repetition		IPMA		Animal type
		S/N	Result	S/N	Result	Titer	Result	
5	10	16,49	POSITIVE	92,44	Negative	<1/50	Negative	Pig
13	6	33,44	POSITIVE	21,39	POSITIVE	<1/50	Negative	Pig
50	8	34,98	POSITIVE	31,92	POSITIVE	1/50	POSITIVE	Sow
50	9	36,87	POSITIVE	34,41	POSITIVE	<1/50	Negative	Sow
50	10	37,94	POSITIVE	ND	ND	1/50	POSITIVE	Sow
99	1	43,9	POSITIVE	46,09	POSITIVE	1/50	POSITIVE	Sow
109	6	48,75	POSITIVE	52,41	Negative	1/50	POSITIVE	Pig
160	4	36,18	POSITIVE	41,56	POSITIVE	<1/50	Negative	Pig
168	4	27,16	POSITIVE	23,3	POSITIVE	1/50	POSITIVE	Pig
168	5	43,04	POSITIVE	40,09	POSITIVE	<1/50	Negative	Pig
168	9	48,49	POSITIVE	44,62	POSITIVE	<1/50	Negative	Pig
171	2	42,44	POSITIVE	42,83	POSITIVE	<1/50	Negative	Pig
181	8	49,69	POSITIVE	43,41	POSITIVE	<1/50	Negative	Piglet
188	2	19,88	POSITIVE	21,58	POSITIVE	<1/50	Negative	Pig
195	8	40,06	POSITIVE	34,79	POSITIVE	1/50	POSITIVE	Pig
231	3	47,52	POSITIVE	49,73	POSITIVE	<1/50	Negative	Pig
243	6	43,06	POSITIVE	85,92	Negative	<1/50	Negative	Pig
264	8	45,49	POSITIVE	50,18	Negative	<1/50	Negative	Pig
273	1	23,94	POSITIVE	23,94	POSITIVE	<1/50	Negative	Pig
278	4	48,67	POSITIVE	35,3	POSITIVE	<1/50	Negative	Pig
298	7	42,33	POSITIVE	41,43	POSITIVE	<1/50	Negative	Pig
316	8	45,48	POSITIVE	45,71	POSITIVE	1/50	POSITIVE	Sow
337	1	27,79	POSITIVE	24,83	POSITIVE	<1/50	Negative	Sow
348	2	44,34	POSITIVE	50,3	Negative	<1/50	Negative	Piglet
348	10	38,6	POSITIVE	37,28	POSITIVE	<1/50	Negative	Piglet
362	9	36,85	POSITIVE	34,66	POSITIVE	<1/50	Negative	Sow
363	10	39,43	POSITIVE	45,07	POSITIVE	<1/50	Negative	Pig
385	3	45,4	POSITIVE	44,88	POSITIVE	<1/50	Negative	Pig
401	10	22,11	POSITIVE	20,87	POSITIVE	1/50	POSITIVE	Pig
417	7	49,4	POSITIVE	45,45	POSITIVE	<1/50	Negative	Pig
435	6	18,28	POSITIVE	17,49	POSITIVE	1/100	POSITIVE	Pig
456	8	49,89	POSITIVE	48,07	POSITIVE	<1/50	Negative	Pig
465	7	41,14	POSITIVE	42,58	POSITIVE	<1/50	Negative	Pig
467	6	40,35	POSITIVE	42,39	POSITIVE	<1/50	Negative	Pig
483	10	47,32	POSITIVE	48,26	POSITIVE	<1/50	Negative	Pig
511	5	48,98	POSITIVE	37,79	POSITIVE	<1/50	Negative	Pig
525	6	36,27	POSITIVE	34,73	POSITIVE	<1/50	Negative	Pig

Table 1: Results of sera positive with PEDV ELISA

## Conclusion

The nature of the results and the knowledge on the epidemiology of the disease, allow concluding that the positive results are false positives inherent to the analysis methods and to the very low prevalence of PEDV in our territory. Our survey shows that the PEDV prevalence in France is less than 0.6%.

To preserve this very favorable situation with PEDV, French pig organizations must now define protective measures when importing animals, external biosecurity measures limiting the risk of contamination of French farms and management measures in case of PED outbreaks.