Porcine Reproductive and Respiratory Syndrome virus detection in weaning-age piglets in 120 French farms

I. Messager[1], N. Robert[1], E. Lewandowski[1]
[1]Boehringer Ingelheim, Pacé, France

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INTRODUCTION

Infection with Porcine Reproductive and Respiratory Syndrome virus (PRRSv) is causing reproductive disorders on sows and respiratory clinical signs on growing pigs. It is one of the most costly diseases in the swine industry, that's why its control should remain a priority[1]. In a PRRSv control plan, the first objective is to stabilize the sow herd. To assess the stability of a sow herd against PRRSv, PCR on blood in weaning-age piglets is regularly implemented[2]. The objective of this work is to describe the results obtained in 120 French farms.

MATERIALS AND METHODS

Between February 2015 and June 2017, 186 sampling-sets from 120 French farms were collected. One farm could be sampled several times. Each set consisted in blood samples from 20 (15% estimated prevalence, 95% confidence) to 30 (10% estimated prevalence, 95% confidence) in weaning-age piglets. PRRS PCR by pool of 5 was performed. The reason of each set investigation was either to assess the absence of PRRSv circulation on a sow herd in absence of PRRSv infection-related clinical signs: set classified as "control" or to evaluate the presence of PRRSv in case of observation of PRRSv infection-related clinical signs: set classified as "clinic". A sampling set was considered "positive" if at least one pool of sera was positive, "negative" if all pools were negative. Whenever possible, ORF5 sequencing was performed on positive result.

RESULTS

On the 186 sampling-sets, 44 were classified as "clinic" and 142 as "control". Thirty-six (19,4 %) sets were positive: 25 (56,8 %) "clinic" sets and 11 (7,7 %) "control" sets. See table 1.

Table 1. Prevalence of « positive » and « negative » sampling sets

	No. of sampling sets	« positive » sets		« negative » sets	
		No.	%	No.	%
« clinic » sets	44	25	56,8	19	43,2
« control » sets	142	11	7,7	131	92,3
Total	**186**	**36**	**19,4**	**150**	**80,6**

The prevalence of positive pools per positive sampling sets is displayed in table 2.

Table 2. Prevalence of positive pools per « positive » sampling set

% positive pools	No. of sampling sets	% of positive sampling
100	3	8,3
[75 à 100[	4	11,1
[50 à 75[	7	19,4
[25 à 50[	12	33,3
< 25	10	27,8
Total	**36**	**100,0**

ORF5 was successfully sequenced on 18 of the 36 positive sets: 12 were characterized as field strains (10 "clinic" sets and 2 "control" sets) and 6 were related to vaccine strains (3 "clinic" sets and 3 "control" sets). See table 3.

Table 3. Sequencing outcome of « positive » sampling sets

Possible Sequencing				
yes				no
18				18
Field strain		Vaccine strain		
12		6		
10 "clinic" sets	2 "control" sets	3 "clinic" sets	3 "control" sets	

DISCUSSION AND CONCLUSION

These results cannot be extrapolated to the French situation because farms were not selected at random. A group of animals is considered PRRSv "stable" when no virus circulation can be detected. For herds which have never used a Modified Live Vaccine (MLV), Elisa tests can be used. For herds using MLV vaccines, Holtkamp et al., recommends to sample weaning-age piglets to assess the sow herd status[2]. To conclude that a sow herd is PRRSv stable it requires a minimum of 4 consecutive negative PCR herd tests in weaning-age piglets sampled every 30 days or more frequently. In our case some farms have been investigated once and even if the result was negative they cannot be considered as stable. ORF5 sequencing is mandatory in order to check strain related to vaccines.

REFERENCES

1. Nathues H. et al, Preventive Veterinary Medicine, 2017
2. Holtkamp D. J. et al, Journal of Swine Health and Production, 2011