

EVALUATION OF THE IMMUNITY AGAINST THE PRRS VIRUS IN PIGLETS FROM VACUNATED SOWS

UAB

Universitat Autònoma de Barcelona

FACULTY OF VETERINARY MEDICINE

JORDI CAMP MONTORO

FINAL DEGREE PROJECT | JUNE 2018



INTRODUCTION

Porcine reproductive and respiratory syndrome (PRRS) has become one of the most important diseases of intensive pig production worldwide. One of the points to emphasize is the humoral immunity, the PRRSV presents a genetic variability and an interaction with the immune system that can have an important impact on the protection given by the vaccines.



OBJECTIVES

The present study pretends to analyze the presence and duration of maternal antibodies against PRRSV in piglets during the period of lactation and transition, and study how the parity of each sow and the number of vaccinations received can be influence. Secondly, the objective will be to evaluate passive immunity in piglets that are viremic to PRRS.



MATERIALS AND METHODS

1 Unstable farm in PRRSV

Porcilis® PRRS (MLV)

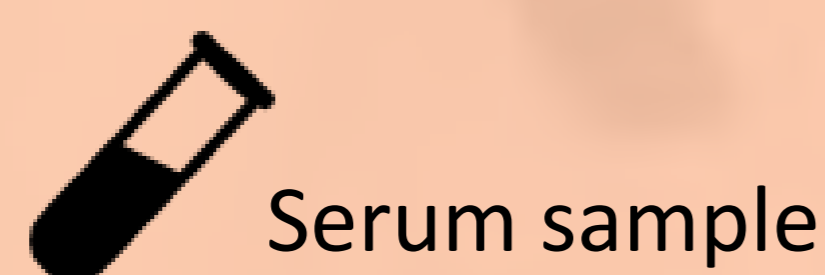
1 per parity

3 replicas / follow-ups

2, 4, 7 and 9 weeks of age



Blood sample



Serum sample



Samples were stored in boxes of 96 at -80 °C

ELISA for antibody detection against PRRS (IDEXX PRRS X3 Ab Test)

360 serum samples of 148 piglets of 34 different sows

Positive control

Negative control

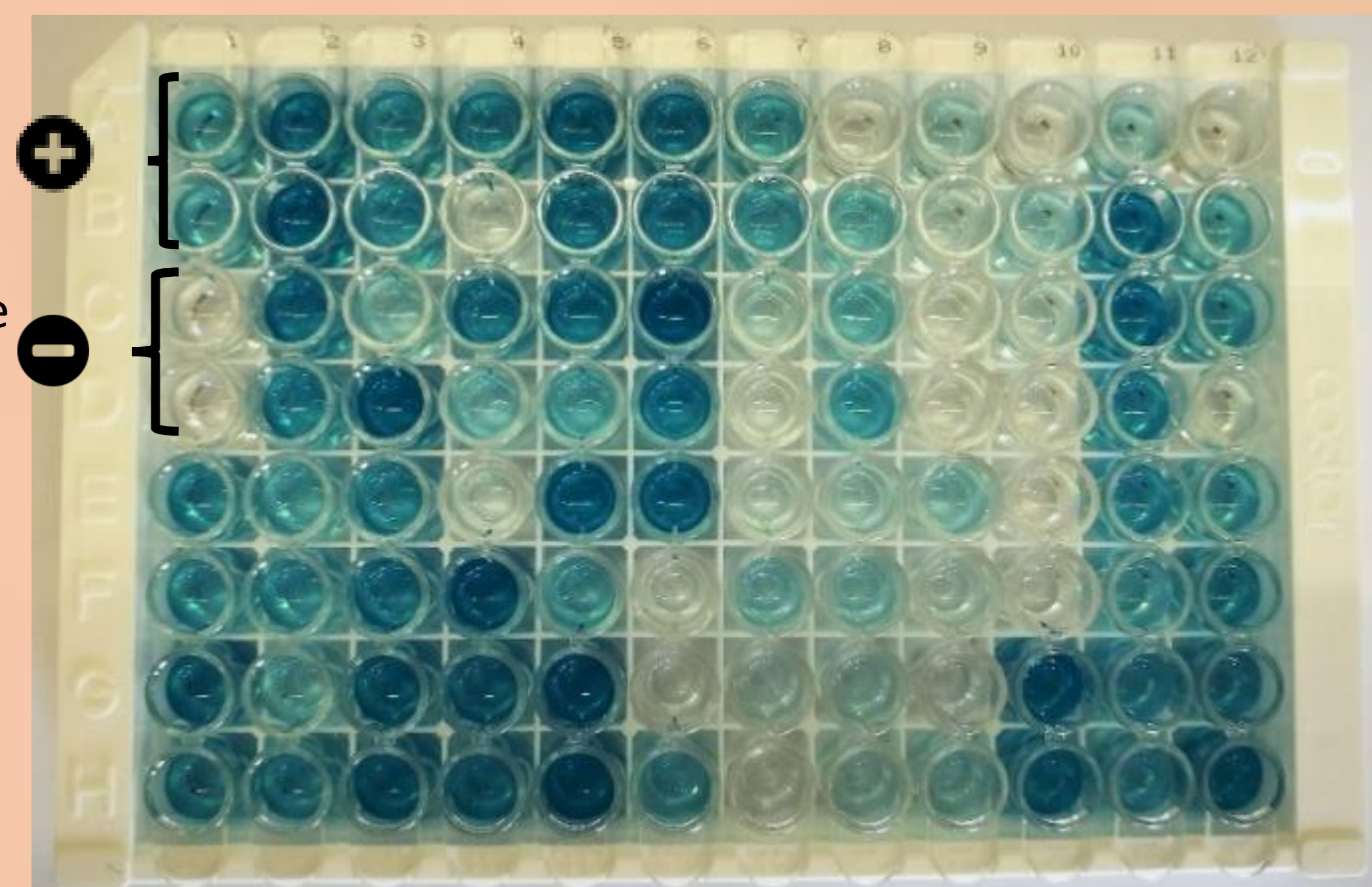


Figure 1: Results obtained in one of the ELISA plates carried out in the study.



RESULTS

Evaluation of the main results

- 305 positive simple to ELISA (84,72%)
- 265 positive simple to PRRSV (73,61%)

		ELISA		Total
		+	-	
PRRSV	+	210	55	265
	-	95	0	95
Total		305	55	360

Table 1: Distribution of the results of the variables ELISA and PRRSV considering the totality of the samples.

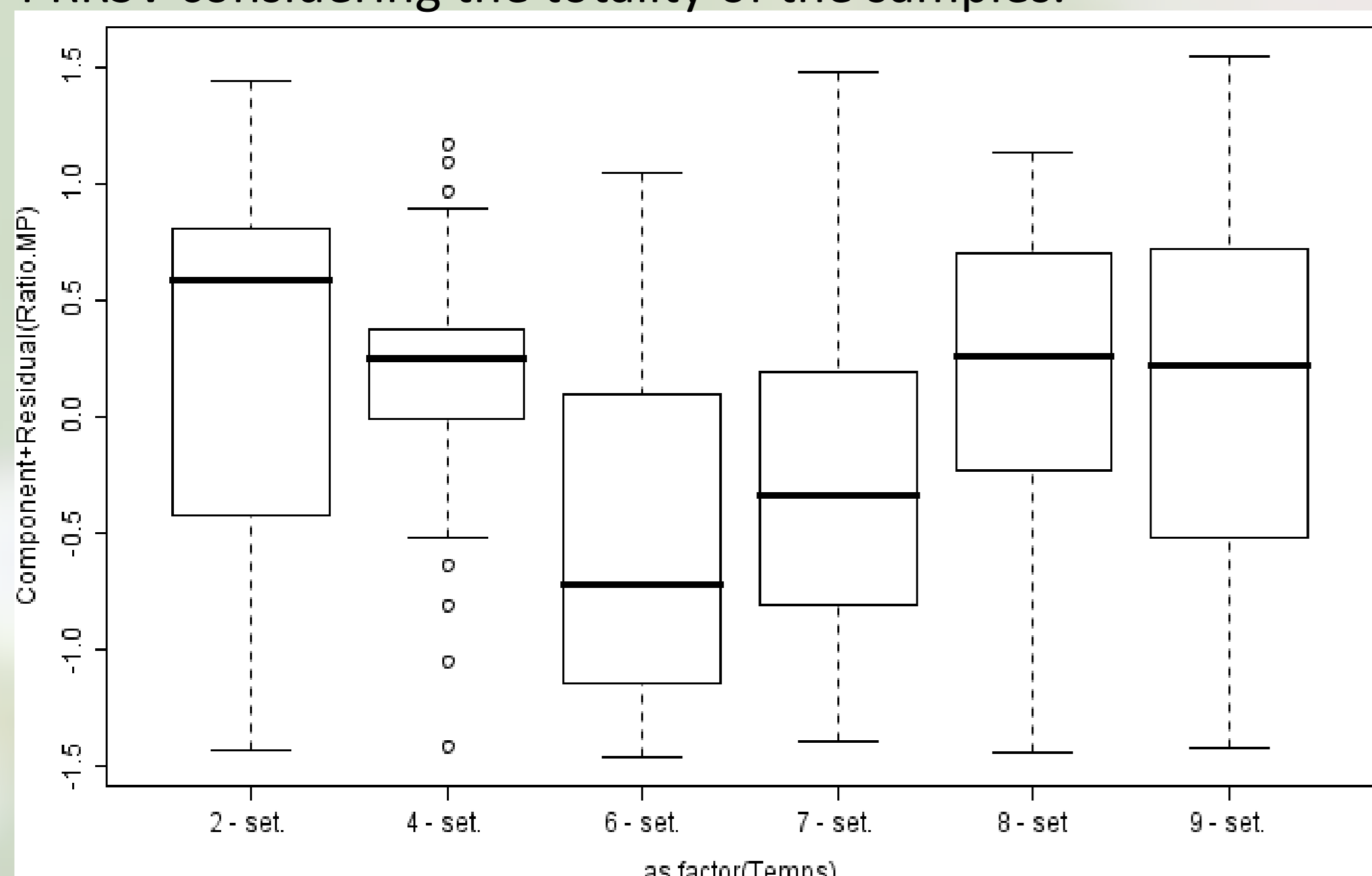


Figure 2: Box-plot of the S/P ratio and the different weeks of age in the study considering the main results (p-value < 0.00001).

Evaluation of the samples of the Replica 1

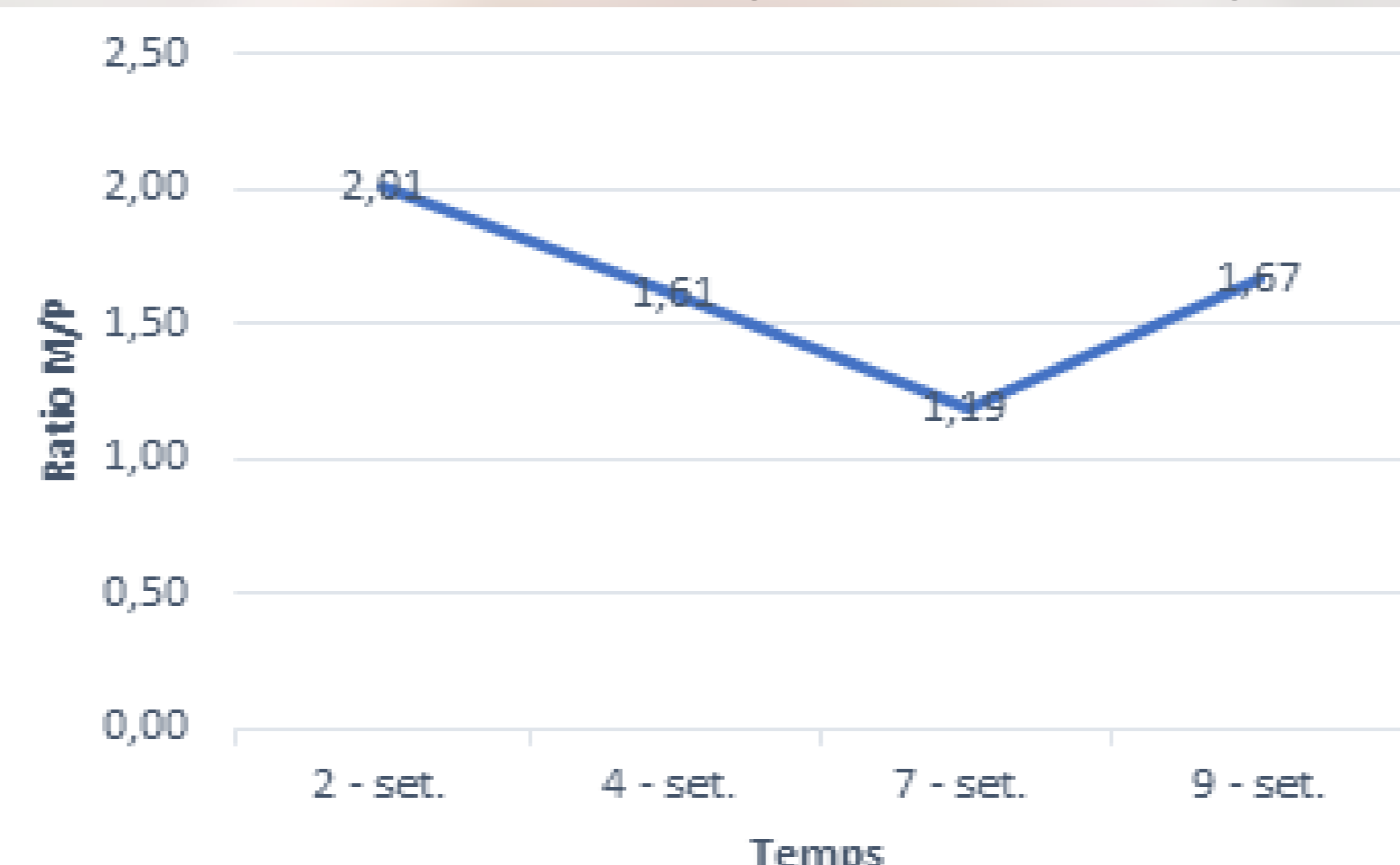


Figure 3: Evolution of immunity throughout lactation and transition weeks in replica 1.

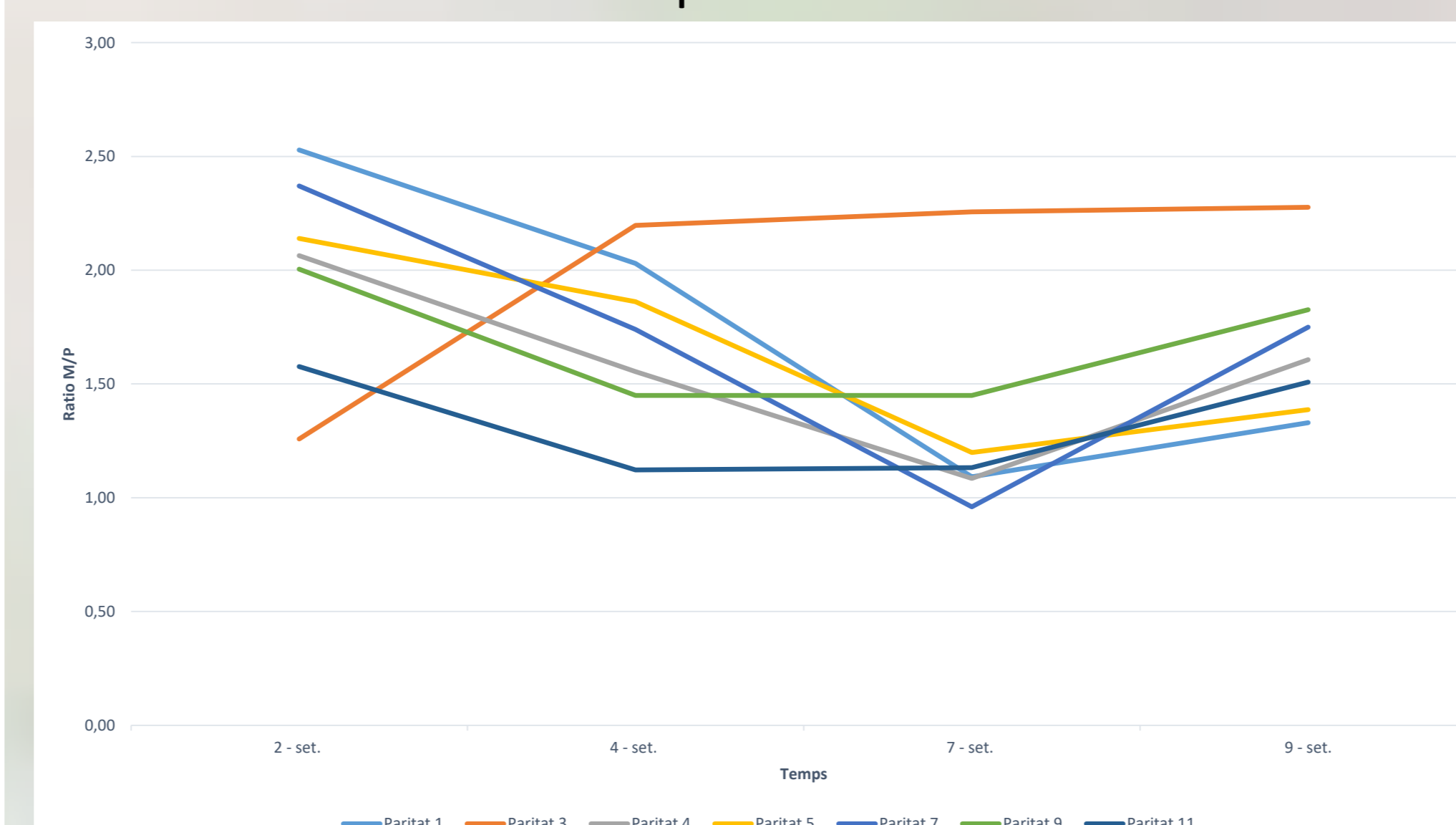


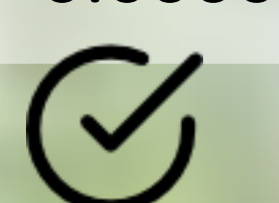
Figure 4: Evolution of immunity per parity throughout lactation and transition weeks in replica 1. Statistically significant differences were observed between parities 1+4+5 and 7+9+11 (p-value < 0,0114).

DISCUSSION

In PRRS endemic farms with a vaccination program in sows, most piglets are positive to ELISA and present a good passive immunity although they can be infected by PRRSV. So viremic piglets will have a role in the re-circulation and persistence of the virus in the farm. Infection pressure results in a faster decrease of the immunity causing a not homogenous protection and variability in the S/P values (Figure 2).

About the evolution of the immunity, there is a decrease of the antibodies until week 7 when it increases again (Figure 3). This is related to the infection of piglets during the weeks 4 to 7 due to the presence of viremic piglets in transition after the weaning at week 3. Therefore, the duration of the passive immunity is lower than in stable farms to PRRS.

Finally, a more number of vaccinations per sow don't lead to a better immunity. It is observed that sows with more parities become anergic and transmit a lower passive immunity than sows with less parities (Figure 4).



CONCLUSIONS

- Vaccination of sows on an unstable farm in PRRS allows the transmission of a good passive immunity to piglets. Therefore, most animals are positive to ELISA antibody, but the protection is not enough to prevent PRRSV infection.
- The duration of passive immunity in the presence of the PRRS virus is between 4 to 7 weeks, lower than farms where the virus does not circulate.
- There was no relation between the number of vaccinations received by sow before farrowing and the duration of the immunity transmitted to the piglets in that part. However, it has been proved that the sows of major parity confer a lower passive immunity to piglets, although they have received a greater number of vaccinations.