

Classifications in regards to PRRS status



Enric Mateu

Senior lecturer at the Department of Animal Health and Anatomy at the Faculty of Veterinary Medicine/Science (Autonomous University of Barcelona) Researcher at CReSA-IRTA



Cinta Prieto

Senior lecturer at the Department of Animal Health at the Faculty of Veterinary Medicines/Science (Complutense University of Madrid)

Highlights

The classification of the farms is carried out based on two parameters:

The exposure of the animals to the virus.

The virus circulation pattern on the exposed farms.

The classification of the farms is very useful for the implementation of effective control programmes at an internal, regional or zonal level.

The breeder farms may be classified in four categories:

Category I: Unstable positive farms.

Category II: Stable positive farms, that can, in turn, be subdivided in stable positive farms, strictly speaking (Category IIa) and stable positive farms subject to elimination programmes (Category IIb).

Category III: Provisionally negative farms.

Category IV: Negative farms.

For some years now, it is known that the possibilities of success of the PRRS control programmes depend on the virus circulation pattern on each farm, because it will determine the most effective measures in each case. As a consequence, farm classification systems that are applicable in any situation have been suggested, and they have evolved through time. The classification of the farms regarding the PRRSV is based on two pillars: 1. the situation concerning the exposure to the virus on the farm; this is, if it is a positive or a negative farm; and 2. the virus circulation pattern on the farm; in the case of the positive farms. These parameters (i.e. the exposure and the way in which the virus circulates) are measured through the determination of antibodies (preferably by means of ELISA) and through the detection of the virus (preferably by means of RT-PCR), respectively.

On the first developed classification system, the farms were classified based on the virus circulation pattern in the sows and in the growing pigs, thus four categories were established:

1. Unstable farms: this category included infected farms on which the virus circulated among the breeders and the growing animals.
2. Active stable farms: this category included infected farms where the virus did not circulate among the breeders, although it circulated among the growing animals.
3. Inactive stable farms: this category included infected farms (the breeders being positive) on which the circulation of the virus could not be detected in the breeders or in the growing animals.
4. Negative farms: this category included those farms that had not become infected and that, therefore, were seronegative.

This classification system allowed establishing the first effective control programmes by implementing specific measures adapted to the particular situation on each farm. Nevertheless, this system, originally developed in the US, has been recently modified to adapt it to the country's new reality, where different control/eradication programmes have been established on the farms and at a regional level to classify them depending if they have implemented or not control programmes and apply a category that defines the farms that have completed an eradication programme but that cannot be considered negative in a definitive way until enough time goes by to confirm the programme's success. Also, the current organization is based on the epidemiological situation on the sow farms, since the production is basically carried out in multiple stages.

In this way, the sow farms are classified, currently, in four different categories:

1. Category I: Unstable positive farms.
2. Category II: Stable positive farms, that can, in turn, be subdivided in stable positive farms, strictly speaking (Category IIa) and stable positive farms subject to elimination programmes (Category IIb).
3. Category III: Provisionally negative farms.
4. Category IV: Negative farms.

The farms included in Category I are those where the animals have been exposed to the virus and there is current circulation of the virus among the breeders, detected in the sows or, more frequently, in the piglets in the lactation stage as a consequence of the transplacental infection of the foetuses or

of the sow-piglet infection during the lactation. In this way, all the farms that have suffered a recent PRRS outbreak and all those on which the virus recirculates chronically are included in this category. Also, all the farms on which the status, regarding the PRRSV, is unknown are also included, by default, in this category.

The farms included in Category II are seropositive, but it cannot be categorically confirmed that the virus is not circulating among the breeders, in spite of the virus circulation being very restricted. These farms must not show any PRRS clinical sign and they must wean piglets that are negative to the virus at least for 90 days (verified by means of four consecutive RT-PCR tests of 30 piglets sampled every 30 days). If these farms have not implemented an elimination programme and they only carry out control strategies, they will be included in the subcategory IIa. Nevertheless, if these farms have started a virus elimination programme, they are included in the subcategory IIb, bearing in mind that the start of the elimination programme begins when the last seropositive animal is introduced or when the last replacement animal is exposed to the virus (whereas it is the field strain circulating on the farm or a vaccinal strain through a vaccination programme).

The provisionally negative farms (Category III) are still seropositive, but there is no virus circulation among the breeders, having confirmed that they do not shed viruses that may infect susceptible animals. This is confirmed by checking that the seronegative replacement sows introduced on the farm remain negative (by means of a PRRSV ELISA test) at least for 60 days after introducing them in the production stage. Also, if there are growing pigs on the farm, they must remain seronegative. When establishing the classification we must bear in mind the possibility of obtaining false positive results in the tests for establishing the presence of antibodies against the virus by means of an ELISA test, so if we face atypical results the use of other confirmatory tests, such as indirect immunofluorescence, is allowed.

Finally, the farms included in Category IV are seronegative to the virus, so there is no virus recirculation. The farms included in this category may have reached the negative status in several ways. So, when we check, looking at the inventory, that all the infected animals have been substituted with negative replacement animals, and that the latter remain seronegative (having to sample a population wide enough so as to ensure, with a 95% confidence level, that the result is representative) we can then award the category IV to these previously positive farms. Likewise, if on a farm classified as provisionally negative (Category III) the animals are seronegative and it has been a year at least since it was classified with this category, this farm can obtain

the negative status (Category IV). On the other hand, all the new farms or those that have carried out a depopulation and a repopulation later on will be considered negative provided that seronegative animals are introduced and that they remain in that state for a month after their introduction.

It is important to underline that the breeder farm classification is key for the control of the infection in the growing animals, because if the virus circulates, even if it is in a limited way, in the breeders, the

obtaining of a negative flow of animals becomes an extraordinarily difficult task. Therefore, any control programme must start with the classification of the sow farms to take in the future the necessary measures for obtaining a Category of at least IIb. Only then we will be able to implement specific control measures in the growing animals.

References

- Holtkamp *et al.*, 2011 J Swine Health Prod, 19: 44–56.

