

# Improvement and validation of the HIPRA biosecurity scoring tool: Focus on what can be improved to avoid PRRSv entry.

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## Introduction

A PRRS control programme cannot be conceived without a biosecurity plan<sup>1</sup>. A good biosecurity plan involves a periodic assessment to detect which areas need improvement in order to prevent the entrance and minimize the spread of PRRSv strains within a farm. In order to detect and prioritize those areas of improvement, biosecurity surveys may help. Sometimes, risk assessment tools are used to check the farm biosecurity. Even though they are very similar, it is important to distinguish between risk and biosecurity assessments. Risk assessments try to identify potential hazards or risk factors that may predispose your farm to a PRRSv outbreak. However, sometimes there is nothing you can do to avoid them (e.g., farm location or animal density around it). On the other hand, biosecurity assessments focus on the actions that you take to minimize those risks. As a result, the biosecurity weaknesses on the farm can be highlighted and actions can be taken to correct them. In the present study the HIPRA biosecurity scoring tool was re-evaluated, improved and validated in order to be more precise in detecting biosecurity failures, to be able to compare biosecurity status between pig farms and to prioritize the critical points for improvement.

## Material & methods

The tool is based on a question-and-scored-answer model. Although the questions covered the most relevant points concerning PRRSv introduction and transmission, different improvements were implemented. Firstly, all the listed questions were reviewed, removed or extended based on a PRRS expert panel opinion. Secondly, the weighting of the answers was re-evaluated in order to minimize the impact of those risk factors, such as location, that could not be improved and to give greater relevance to the critical points that needed attention and improvement. Changes were applied to an existing database (34 biosecurity surveys) to compare the effect of the modifications on the farm ranking and the biosecurity characteristics. Finally, a report was automatically generated after the survey was completed. This report includes the identification of the 5 most critical points as well as graphs benchmarking the biosecurity (Figure 1).

## Results

As a result of the question review, the total number of questions was increased from 66 to 84, extending the loading-bay, transport and personnel categories. The relative weighting of internal and external biosecurity in relation to the total biosecurity score went from 36% to 27% and from 64% to 73%, respectively. Questions relating to general risks, such as general characteristics or farm location of the farm, were still considered but their weighting in the final score was reduced from 14.7% to 3.3% and from 5% to 2.3% respectively. On the other hand, questions relating to frequent routes of PRRSv introduction, such as replacement animals or personnel, had their relative importance increased or maintained, from 5.9% to 20% and from 14.5% to 13.2%, respectively. (Table 1).

Category		Before	After	Change
Internal	Piglets management	9.87	11.24	↑
	Gilts management	14.68	13.37	≈
External	Location	5.06	2.31	↓
	General characteristics	14.66	3.34	↓↓
	Replacement animals	5.87	20.04	↑↑
	Semen	18.9	21.51	↑
	Trucks and vehicles	16.46	14.99	≈
	Personnel and supplies	14.49	13.2	≈

**Table 1.** Relative weighting (%) by subcategory in internal and external biosecurity on the total maximum score before and after the modification and degree of change between the two versions.

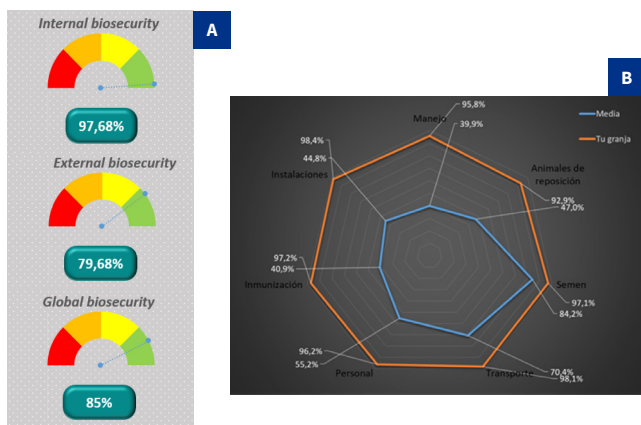
After the re-evaluation of the 34 biosecurity surveys, with the improved scoring tool, the biosecurity ranking of the farms changed. Farms with the worst biosecurity were at the top of the list once location and herd characteristics were minimized. For example, a farm that was the 2<sup>nd</sup> least risky farm out of the 34 farms, moved up 9 positions once the changes were applied. This showed that most of its absence of risk was due to the farm's good location, despite the fact that its biosecurity was worse (especially in the semen category) than other riskier farms (due to location). The changes put more emphasis on semen management and biosecurity in this specific case.

## Discussion & Conclusion

The tool was shown to be useful for establishing priorities. The changes implemented helped farmers to focus on what could be improved in their biosecurity plans rather than focusing mainly on their risks.

## References

1. Laura Valeria Alarcón, Alberto Allepez & Enric Mateu (2021). Biosecurity in pig farms: a review. Porcine Health Management volume 7, Article number: 5



**Figure 1.** Example of the final report visualizations A) the internal, external and overall farm biosecurity and B) the benchmarking of the farm biosecurity compared to the company's average biosecurity using a radar chart.