

# Relationship between serological status of sows and the assignment as *Salmonella* risk farm in the Belgian *Salmonella* control program

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## Introduction

*Salmonella* is considered as one of the most important food borne pathogens that has potential implications for human health (1). To control *Salmonella* at the pre-harvest stage, the implementation of a surveillance and control program has been established in the different EU Member States. Since 2005, the Belgian Federal Agency for the Safety of the Food Chain (FASFC) implemented a National *Salmonella* surveillance and control program in pigs, the *Salmonella* Action Plan (SAP), which became compulsory by means of a Royal act in July 2007 (2). Since July 2007, Belgian pig farms can be assigned as *Salmonella*-risk farms, based on serological analysis of blood samples collected from the fattening pigs.

This study was conducted to evaluate the serological status of the sows on *Salmonella* risk farms compared to non-assigned farms.

## Materials and methods

With a 4-month interval, every Belgian pig farm needs to collect blood samples from 12 fattening pigs for the National Aujeszky-disease monitoring program. All samples are analyzed using an indirect LPS-*Salmonella* ELISA (Idexx). Since July 2007, farms are identified as risk farms if the mean S/P-ratio, from 12 fattening pigs, is equal to or higher than 0.6 for 3 successive sampling events.

For this study blood samples (n = 1138) of sows were randomly collected on 100 different farrow-to-finish herds. To this end, 583 samples were obtained from 50 *Salmonella* risk farms, identified as farms with a mean S/P-ratio equal to or higher than 0.6 for 3 successive sampling events; and 555 samples were obtained from non-risk farms, identified as farms with a mean S/P-value lower than 0.2 for 3 successive sampling events.

A statistical analysis (Mann-Whitney-Wilcoxon test) was performed to compare the mean S/P ratio in both sow groups.

## Results

The results show that the mean S/P ratio obtained from the sows of the *Salmonella* risk-farms (1.138 ± 0.026 SEM) was significantly higher ( $P < 0.0001$ ) compared with the non-risk farms (0.702 ± 0.021 SEM). The mean S/P-ratio for the 1138 sows was 0.925 ± 0.018 SEM. In this study there was a

presence of *Salmonella* antibodies in 98.7% of the sows. At a cut-off of S/P = 0,6 we found 63,6% of the sows to be positive.

Table 1. Number of samples sows and their mean S/P-value ± SEM for *Salmonella* in blood

	Number of sows	Mean S/P-value
Risk-farms	583	1,138 ± 0.026
Non-risk-farms	555	0,702 ± 0.021
Total	1138	0,925 ± 0.018

## Discussion and conclusions

Sows play an important role in the maintenance of *Salmonella* infections in farrow-to-finish herds (3). The increasing number of sows on a farrow-to-finish farm was recently identified as a risk factor associated with higher average S/P-values on a farm (4). In this study we could clearly show that the infection status of the sows plays a significant role in the assignment as a *Salmonella* risk farm in the Belgian *Salmonella* control program, which is based on sampling of fattening pigs. Control of *Salmonella* on farrow-to-finish herds is now almost only done by implementing measures in the fattening unit. It is clear that further studies are needed to evaluate intervention measures in the sow unit. Vaccination could be one of these intervention options.

In conclusion, it is clear that the role of the sows and their serological *Salmonella* status is a potential influencing factor for the assignment of *Salmonella* risk farms, which is principally based on sampling of fattening pigs.

## References

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