



# The serological Salmonella Monitoring in German pork production: the structure of the central database and preliminary results of a basic epidemiological report



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## Introduction

Since 2002, the Qualität und Sicherheit GmbH (QS) has carried out a serological Salmonella monitoring in German finishing pig herds. For this purpose the farms are differentiated into three risk categories by their risk to introduce Salmonella into the pork production chain. All data generated within the monitoring are entered into the central QS database. A basic epidemiological analysis has been carried out including all data from April 1, 2003 until March 31, 2006.

## Materials and Methods

### Results in OD%:

- transformed into the logarithmic scale for statistical analysis.
- retransformed into geometric means to display results.

Basic epidemiologic report: Data structure	
Samples	1 762 270
Farms	15 452
Slaughterhouses	203
Laboratories	37
Regions (based on farming structures & animal density)	6

### Sampling and laboratory investigations:

- up to 60 samples / year and farm
- blood serum or meat juice samples
- 4 licenced ELISA tests
- results: OD% (optical density) positive / negative (cut-off: 40 OD%)

### Statistical analyses:

- SAS®, version 9.1 TS level 1M3.

### Categorisation:

The categorisation is updated quarterly based on the percentage of positive samples within each farm during the last 12 months.

Category	I	II	III
%age pos. samples	< 20	20-40	> 40

further categories: "below quota"  
"sampling gaps"

## Results & Discussion



**Figure 1:** Percentage of positive samples per quarter

The factors testkit, laboratory, and region showed various interactions. Therefore, identifying one of these factors as an initial risk factor is invalid, and additional analyses have to be performed to affirm the real influences of these factors.

### Antibody activity in OD% per region:

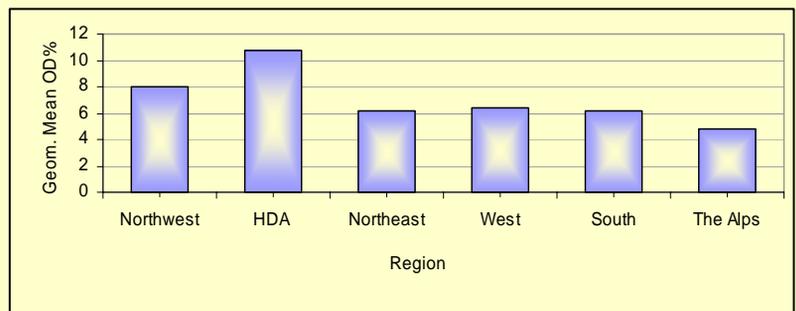
- The North-western regions - including the region "HDA"\* - are districts with the highest density of animals in Germany.
- The highest OD%-values and percentages of category-III-farms can be found within these regions, because the high number of animals per area and farm enhance the spread of pathogens within the animal population due to the short transmission pathways.

### Categorisation of the farms in the quarter I-2006:

- Most of the farms are category I (47.5%).
- More than 40% of the farms could not be classified because of missing samples or sampling gaps.
- The high proportion of farms with few samples reflects that the participation at this monitoring programme still is voluntarily and that participating farms are decorated with the QS certificate.

**Table 1:** Categorisation of the farms in the quarter I-2006

	Categorisation					Overall
	I	II	III	Below quota	Gaps	
<b>No.</b>	5 875	1 087	407	4 458	538	12 365
<b>%</b>	47.5	8.7	3.2	36.0	4.3	100.0



**Figure 2:** Antibody activity in OD% per region

\*HDA= districts with highest density of animals within the Northwest of Germany