The serological Salmonella monitoring in German pork production: How can progress be observed?

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Introduction

To reduce the Salmonella burden in pork, the Qualität und Sicherheit GmbH (QS) has carried out a serological Salmonella monitoring program in German finishing pig herds since 2002.

All data generated within the monitoring are entered into the central QS database. An epidemiological analysis has been conducted including all data from January 1, 2005 until December 31, 2008.

Farms' changes in Salmonella burden should be observed.

Material and Methods

Material

- up to 60 samples / year and farm
- meat juice or blood serum samples

Methods

- 3 licenced ELISA tests
- parameters:
  - OD% (optical density)
  - cut-off: 40 OD%
- SAS®, version 9.1 TS level 1M3.

Table 1:	Data Structure
Samples	4 454 999
Farms	22 303

Categories

- percentage positive samples during the last 12 months
- updated quarterly

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

Results

Category status of the farms

- Most of the farms are category I (Figure 1). The percentage of the category I farms changed only slightly over time.

- The number of participating farms increased over the years. Since 2007, farmers are forced even by law to calculate their Salmonella category.

- The percentage of farms below quota decreased continually since the beginning of 2007.
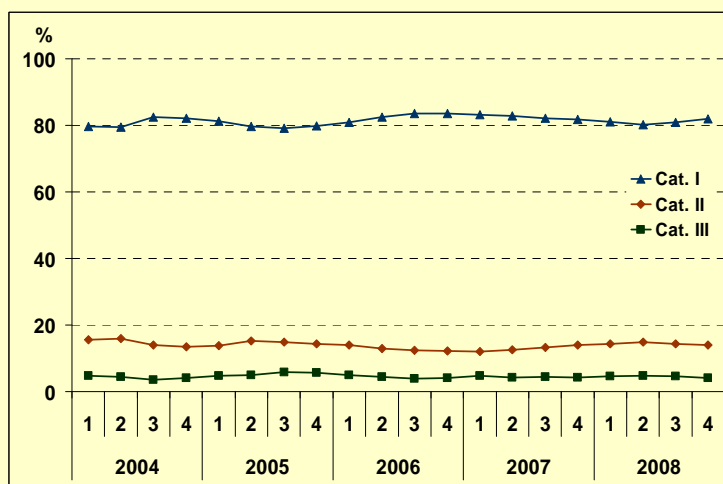

Table 2: category status of 5,561 farms in IV/2005 and IV/2008					
	IV/2008				
IV/2005	**I**	**II**	**III**	**All**	**%**
I	4 019	375	78	4 472	(80.4)
II	534	201	43	778	(14.0)
III	168	107	36	311	(5.6)
All %	4 721 (84.9)	683 (12.3)	157 (2.8)	5 561 (100.0)	

Category status changes

The analysis of data from farms that had a valid category in 2005-IV as well as in 2008-IV (table 2) showed that the percentage of category-I-farms increased from 80.4 % in 2005-IV to 84.9 % in 2008-IV.

Correspondingly, the percentages of farms in category II and category III decreased during this period. Bowker's test of symmetry showed statistical significant differences (p < 0.0001).

Discussion

Categories I, II, and III farms' distribution seems to be stable since the beginning of the monitoring program. But regarding the fraction of farms that participated for a long time, the farms category has been slightly enhanced: More farms **upgraded** than downgraded. This effect has been masked by the continuous influx of farms which have a higher Salmonella burden. Farms which had category II or III underlay measures of consultations that may have caused positive effects on the Salmonella status.