

Faecal sampling under-estimates the actual prevalence of *Salmonella* in laying hen flocks

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INTRODUCTION

In all EU member states, *Salmonella* surveillance in laying hen herds is obligatory. In general only a limited number of pooled faeces and / or dust samples are collected to determine whether a flock is *Salmonella*-positive or not. This sampling methodology does not allow to estimate the within-herd prevalence. The aim of this study is to make a comparison between different sampling procedures for the assessment of the within-herd prevalence of *Salmonella* in laying hens.

MATERIALS AND METHODS

- 30 randomly selected flocks sampled (30 different herds)
- All flocks screened negative by the official *Salmonella* monitoring program and all flocks were vaccinated against *Salmonella*.
- Flocks sampled week prior to depopulation,
- On each flock following samples were collected: (1) 40 cloacal swabs of 40 randomly selected hens, (2) 5 pooled faeces samples and (3) 1 mixed dust sample
- Subsequently transport of 100 live hens to the Faculty. After transport a cloacal swab was taken from each hen (n=100).
- Finally euthanasia of all hens and collection of both caeca (pooled for further processing).
- All samples were analyzed using a modification of ISO 6579:2002, as recommended by the European Community Reference Laboratory for *Salmonella* in Bilthoven, The Netherlands.

RESULTS & DISCUSSION

- Using the on-farm sampling we couldn't detect any *Salmonella*.
- However, after transportation *Salmonella* was detected in both swabs and caeca on **6 out of the 30 farms**.

Table 1: Bacteriological analyses of samples taken on 6 *Salmonella*-positive laying hen farms

Farm	Pooled faeces	Mixed dust	Cloacal swabs	Cloacal swabs after transport	Caeca after transport
1	0/5	0/1	0/40	3/100	6/100
2	0/5	0/1	0/40	3/100	10/100
3	0/5	0/1	0/40	1/100	14/100
4	0/5	0/1	0/40	4/100	7/100
5	0/5	0/1	0/40	2/100	5/100
6	0/5	0/1	0/40	2/100	8/100

- The prevalence in the swabs was never above 4%, where it varied between 5 and 14% in the caeca.
- Even in those flocks where *Salmonella* was found, the infection pressure at the time of sampling was probably low. This is based on the observation that in the conventional sampling methodology no positive samples were found (no indication of active shedding) and only a limited number of shedders and carriers were found after submitting the birds to transport stress and intensive sampling.
- The age of the production system and a previous *Salmonella* infection on the farm had a significant influence on the prevalence of *Salmonella*. The housing type did not significantly influence the prevalence of *Salmonella*.

CONCLUSION

Based on these results, it can be expected that, depending on the sampling procedure, the proportion of *Salmonella* infected flocks is underestimated based on the results of the official monitoring program.

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