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Report
on results of monitoring / control of Salmonella
in breeding flocks of *Gallus gallus* in the European Union and
Norway
in 2004

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Working document

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Background

Regulation (EC) No 2160/2003 of the European Parliament and of the Council of 17 November 2003 on the control of salmonella and other specified zoonotic agents (OJ 325 of 12.12.2003), Article 4.3 and Annex I require setting of the first Community target for the reduction of salmonella prevalence in breeding flocks of *Gallus gallus* within 12 months of entry into force of the Regulation.

In order to prepare for the setting of such target, it was necessary to collect relevant data in the different Member States during a sufficient period of time. Because the Directive 92/117/EEC contained in its Annex III detailed compulsory requirements for the regular testing of breeding flocks of *Gallus gallus*, this was considered a basis to collect these data.

Collection of these data started from 1 January 2004 and continued during the year. A common frame for reporting together with detailed guidelines were provided beforehand.

As laid down in Article 4.5, the salmonella serotypes to be covered by the Community target during the 3 year transitional period should cover the five most frequent salmonella serotypes in human salmonellosis. Therefore, collection of data and reporting had to cover at least *Salmonella* Enteritidis, *Salmonella* Typhimurium, *Salmonella* Hadar, *Salmonella* Virchow and *Salmonella* Infantis.

Reporting by the Member States

Availability: A report on the results of the monitoring or control activities of Salmonella in breeding flocks of *Gallus gallus* was requested from all Member states of the EU (Norway participating voluntarily) for the year 2004. Until end of March 2005, reports were available from 25 countries (out of 26). For Luxembourg, it is known that no breeding flocks exist.

All countries provided the results of sampling according to the minimum requirements of Annex III to Dir. 92/117/EEC in breeding flocks (requested as Table 1). In addition, several countries reported results of sampling according to Annex III to Dir. 92/117/EEC in hatcheries (requested as Table 2). There, additional data were requested on the hatchery level, which could not be traced back to the flock of origin. For some countries, there was no need to report data additional to those attributed to flocks reported in Table 1. Additional data on hatchery based investigations were provided from 12 countries. As regards parent flocks, all these countries have reported data according to the minimum sampling as requested in Table 1 and it is assumed in this analysis that the data complement each other. As regards grandparent flocks, Spain reported results of investigations on hatchery level (Table 2) but not according to the minimum scheme requested in Table 1. This confirms the assumption that the positive findings are complementary to each other. As regards the hatchery based samples, in principle this may include repeated sampling of batches from same flocks but considering the magnitude of the investigations this should be quite limited.

The outcome of sampling additionally to that required according to Directive 92/117/EEC was reported from one country, Finland.

Reporting period: The final reports received covered the whole year 2004 for all countries. The New Member States included in their reports the period January to April on a voluntary basis.

Reporting format: Not all countries provided the data in the requested format. The breakdown for the production period and / or the production line was also missing in some countries; in some of them this had been done for the interim report, but not for the final report. Some countries added data in the line 'Parent', and usually it was expressed that there were to some extent flocks where the age period was not known (Flocks 'unspecified').

These flocks have been added to the overall calculations based on the rearing flocks, production flocks and the unspecified ones. In consequence, the tables giving total numbers can not be directly developed from data on rearing and production flocks. Day old chicks have been shown separately but not been included in the overall figure.

Limitations: Some countries expressed limitations on the data. In Ireland, data were based on samples tested, not on the flocks. Portugal explained that data include repeated sampling. There, the information on the serovars identified was related to the positive samples and was therefore proportionally attributed to the positive flocks in this report. As regards the United Kingdom, only the total number of flocks tested which were in the production phase could be reported. Figures for the isolations of Salmonella during the rearing stage were available and for the purposes of calculation of Salmonella in this age group, a figure of one third of the flocks in the production stage was used as the number of rearing flocks tested. Cyprus provided 'raw data' from which the number of flocks tested and the outcome was extracted. For Hungary, only the total numbers for all parent flocks were used as some inconsistencies in the categorisation of the data had been identified. In consequence, the tables on subcategories (i.e. rearing flocks) do not include those data and some countries are not included at all. In France, the number of firms which have transmitted the statistics on positive flocks on a voluntary basis was reported. In Italy, only 50% of the flocks were covered in the report. For the calculation of the worst case scenario the figures reported in Italy and France have been adjusted by multiplying them with factor 2.

None of the 25 countries reported problems in covering the serovars requested. All countries, where *Salmonella spp.* was identified, provided data on the top 5 serovars (*S. Enteritidis*, *S. Typhimurium*, *S. Hadar*, *S. Infantis*, *S. Virchow*) and sometimes data on other serovars were included in the report too. Nevertheless, there may be some underestimation of the prevalence for serovars other than *S. Enteritidis* and *S. Typhimurium*, as for a number of countries only *S. Enteritidis* and *S. Typhimurium* are subject to compulsory notification and reports were made on a voluntary basis.

It can be assumed that as regards adult flocks (elite, grandparent, parent) all Member States and Norway are included in some way (either through flock sampling or hatcheries) in the overall data presented, but not always specifically in the data shown for the production level. Thus, despite limitations, the report should give a relatively accurate view, though with some underestimation of the situation in the EU.

Results of the monitoring according to Dir. 92/117/EEC

The above given restrictions to the availability of information have to be taken into account when analysing the results. The data used do not always reflect the true prevalence. Thus, the data given below has to be interpreted carefully.

The summarised results for all production lines together are given in the following tables. Data are given for the number of countries reporting, the number of countries and flocks with positive findings and the number of positive findings for

- a) *Salmonella*,
- b) *S. Enteritidis* and *S. Typhimurium*,
- c) *S. Hadar*, *S. Infantis*, *S. Virchow* and
- d) the top five serovars (*S. Enteritidis* and *S. Typhimurium*, *S. Hadar*, *S. Infantis*, *S. Virchow*).

Based on the number of flocks tested or the surrogates in case of missing data, an overall mean was calculated. The lowest (minimum) and highest (maximum) country specific share and the median is presented, reflecting that 50% of the national values are below the median and 50% above. As not all countries provided the same level of details, the number of countries contributing to the figures is included in the tables. Furthermore, the number of

countries with positive findings of Salmonella or the sub-populations of it are given in the summarising tables.

The more detailed data for the egg production and meat production line separately are given in Annex I. As not all countries reported separately for the production lines, this covers only a subset of all countries and flocks tested. The data for each country are given in the Annex II.

All production lines – all flocks

In Table 1.A the results of sampling acc. to minimum requirements of the directive from all production lines, from elite, grandparent and parent flocks and for the age groups (day old chicks excluded) are summarised. In this table, data from all 25 countries are covered, as the figures take into account data, which could not be attributed clearly to a production line or level. The country specific data are shown in Annex II. Table 1.

On average, 5.1 % of the flocks were positive for Salmonella, 1.8% for S. Enteritidis or S. Typhimurium. Taking into account the next three serovars, this adds 1.1% to reach 2.8% positive flocks for the top five serovars.

Sampling at hatchery, which was not traced back to the holding, resulted in findings of 390 Salmonella isolates, out of them 119 isolates belonging to the top five serovars (Table 1.B). Additionally to the countries where S. Enteritidis was confirmed in the flocks, S. Enteritidis was detected in two additional countries in hatchery samples (D, I).

In Table 1.C. a worst case scenario is shown, using the assumption that all results reported in hatcheries would have been confirmed in flocks additionally to those confirmed at the holding. Furthermore, a correction factor of 2 is applied to overcome the limitation in data from France and Italy. As a result, this would result in a probable number of 1113 Salmonella positive flocks, with 477 positive for one of the top 5 serovars.

Table 1. ALL LINES - ALL FLOCKS

	Flocks tested	Salmonella	S.Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
A. Minimum requirements					
Countries	25 (15/10) [#]	19 (12/7) ^{##}	16 (10/6) ^{##}	9 (7/2) ^{##}	18 (15/7) ^{##}
N	10925	558	193	115	308
Mean		5.1	1.8	1.1	2.8
Minimum		0	0	0	0
Maximum *		34.7	28.0*	2.7	28.0*
Median		3.9	1.2	0	1.5
B. Hatchery based data					
Countries **	12 (7/5) [#]	10 (7/3) ^{##}	6 (4/2) ^{##}	5 (4/1) ^{##}	7 (5/2) ^{##}
N		390	77	42	119
C. Worst case scenario (All findings in flocks and at hatchery, adjusted for limitations of data)					
Countries	25 (15/9) [#]	19 (12/7) ^{##}	16 (12/6) ^{##}	9 (7/2) ^{##}	18 (15/7) ^{##}
N		1113	275	202	477

* The country reporting 28 % positive findings of S. Enteritidis and S. Typhimurium did not report any findings of the other three relevant serovars. Therefore, the maximum for the top five serovars has the same value as for S. Enteritidis and S. Typhimurium

** Spain reported only on hatchery findings as regards grandparent flocks

N Number of flocks tested or flocks positive for Salmonella or the respective serovar

Number of countries reporting on flocks tested

Number of countries reporting positive findings of the serovars;

In brackets, first the number of countries applying the directive for a long period (old MS and Norway), secondly the number of new Member States is given.

Elite and grand parent flocks

Table 2 includes both, grandparent and elite flocks regardless the production line. No distinction between rearing and production period had been requested, but some countries provided it on a voluntary basis.

In sampling acc. to minimum requirements (Table 2.A) there was only one flock positive for S. Enteritidis or S. Typhimurium, and there were 11 additional flocks positive for one of the other serovars under consideration. All these flocks were reported in the same country. Additional results of sampling at hatchery are given in Table 2.B. The Czech Republic reported a positive finding in a hatchery. The Table 2.C gives some maximum data using the worst case scenario assumptions as previously specified.

Table 2. ELITE AND GRANDPARENT FLOCKS – ALL FLOCKS

	Flocks tested	Salmonella	S.Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
A. Minimum requirements					
Countries	13 (10/3) [#]	4 (3/1) ^{###}	1 (1/0) ^{###}	2 (1/1) ^{###}	3 (2/1) ^{###}
N	858	16	1	11	12
Mean		1.9	0.1	1.3	1.4
Minimum		0	0	0	0
Maximum*		40	20*	4.0*	20*
Median		0	0	0	0
B. Hatchery based data					
Countries	6 (4/2) [#]	2 (1/1) ^{###}	1 (0/1) ^{###}	0 ^{##}	1 (0/1) ^{###}
N		3	1	0	1
C. Worst case scenario (All findings in flocks and at hatchery, adjusted for limitations of data)					
Countries	13 (10/3) [#]	5 (3/2) ^{###}	2 (1/1) ^{###}	2 (1/1) ^{###}	4 (2/2) ^{###}
N		26	3	11	14

* The country reporting 20 % positive findings of S. Enteritidis and S. Typhimurium did not report any findings of the other three relevant serovars. Therefore, the maximum for the top five serovars has the same value as for S. Enteritidis and S. Typhimurium

N Number of flocks tested or flocks positive for Salmonella or the respective serovar

[#] Number of countries reporting on flocks tested

^{##} Number of countries reporting positive findings of the serovars;

^{###} In brackets, first the number of countries applying the directive for a long period (old MS and Norway), secondly the number of new Member States is given.

Parent flocks

Parent flocks –all age groups and production lines

Table 3 summarises the data for all parent flocks. Those flocks, which have not been allocated clearly to the rearing or production period or the production line were taken into account in this calculation. Day old chicks were not included. The country specific data are shown in Annex II. Table 2.

Overall, 171 (1.7%) of the parent flocks were positive for S. Enteritidis or S. Typhimurium in sampling according to minimum requirements. The inclusion of further three serovars adds 1.0% positive flocks. For the top five serovars, 2.7% positive flocks were reported.

Table 3. PARENT FLOCKS – ALL FLOCKS

	Flocks tested	Salmonella	S.Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
Minimum requirements					
Countries	25 (15/10) #	20 (13/7) ##	15 (9/6) ##	10 (8/2) ##	18 (12/6) ##
N *	10067	542	171	104	275
Mean		5.4	1.7	1.0	2.7
Minimum		0	0	0	0
Maximum		34.7	28.0**	2.8**	28.0**
Median		4.0	0.9	0	1.6

- * These summary figures include data, which have not been allocated clearly to the rearing or production period. Day old chicks have not been included in the calculation.
- ** The country reporting 28 % positive findings of S. Enteritidis and S. Typhimurium did not report any findings of the other three relevant serovars. Therefore, the maximum for the top five serovars has the same value as for S. Enteritidis and S. Typhimurium
- N Number of flocks tested or flocks positive for Salmonella or the respective serovar
- # Number of countries reporting on flocks tested
- ## Number of countries reporting positive findings of the serovars;
- #, ## In brackets, first the number of countries applying the directive for a long period (old MS and Norway), secondly the number of new Member States is given.

Parent flocks (adult)

In table 4, the results for the parent breeders during the production period are given. The country specific data are shown in Annex II. Table 3.

Overall, 2.1 % of the flocks were positive for S. Enteritidis or S. Typhimurium. In addition, 1.1 % of the flocks were positive for the other 3 serovars. Thus, altogether 189 (3.2 %) of the adult flocks were positive for the top five serovars.

Taking into account the findings reported on hatchery level and the limitations of the data on France and Italy adds about 100 % Salmonella findings, and about 55 % for the top five serovars.

Table 4. PARENT FLOCKS (PRODUCTION)

	Flocks tested	Salmonella	S.Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
A. Minimum requirements					
Countries	21 (12/9) #	15 (10/5) ##	13 (8/5) ##	8 (6/2) ##	15 (10/5) ##
N	5878	323	123	66	189
Mean		5.5	2.1	1.1	3.2
Minimum		0	0	0	0
Maximum		20.3	12.0	4.6	16.6
Median		3.3	0.5	0	1.0
B. Hatchery based data					
Countries *	11 (6/5) #	10 (7/3) ##	6(4/2) ##	6 (5/1) ##	9 (6/3) ##
N		387	76	42	118
C. Worst case scenario (All findings in flocks and at hatchery, adjusted for limitations of data)					
Countries *	21 (12/9) #	16 (11/5) ##	16 (11/5) ##	8 (6/2) ##	16 (11/5) ##
N		844	203	143	346

- N Number of flocks tested or flocks positive for Salmonella or the respective serovar
- # Number of countries reporting on flocks tested
- ## Number of countries reporting positive findings of the serovars;
- #, ## In brackets, first the number of countries applying the directive for a long period (old MS and Norway), secondly the number of new Member States is given.

Parent flocks (rearing)

In table 5, the breakdown for the rearing period is given. The country specific data are shown in Annex II. Table 4.

Table 5. PARENT FLOCKS (REARING)

	Flocks tested	Salmonella	S. Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
Minimum requirements					
Countries	20 (12/8) [#]	10 (8/2) ^{###}	5 (3/2) ^{###}	5 (4/1) ^{###}	8 (6/2) ^{###}
N	2939	113	19	17	36
Mean		3.8	0.6	0.6	1.2
Minimum		0	0	0	0
Maximum*		16.0	4.8 *	2.4 *	4.8 *
Median		0.1	0	0	0

* The country reporting 4.8 % positive findings of S. Enteritidis and S. Typhimurium did not report any findings of the other three relevant serovars. Therefore, the maximum for the top five serovars has the same value as for S. Enteritidis and S. Typhimurium

N Number of flocks tested or flocks positive for Salmonella or the respective serovar

Number of countries reporting on flocks tested

Number of countries reporting positive findings of the serovars;

#,### In brackets, first the number of countries applying the directive for a long period (old MS and Norway), secondly the number of new Member States is given.

In table 6, the breakdown for day old chicks is given. These data had not been taken into account when overall figures were calculated. The country specific data are shown in Annex II. Table 5.

Table 6. PARENT FLOCKS (DAY OLD CHICKS)

	Flocks tested	Salmonella	S. Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
Minimum requirements					
Countries	15 (7/8) [#]	8 (4/4) ^{###}	6 (3/3) ^{###}	4 (2/2) ^{###}	6 (3/3) ^{###}
N *	1736	43	23	12	35
Mean		2.5	1.3	0.7	2.0
Minimum		0	0	0	0
Maximum		9.2	5.4	3.1	6.9
Median		1.3	0	0	0

* These data have not been included in the calculation for all breeding flocks (Table 1) and all parent flocks (Table 3).

N Number of flocks tested or flocks positive for Salmonella or the respective serovar

Number of countries reporting on flocks tested

Number of countries reporting positive findings of the serovars;

#,### In brackets, first the number of countries applying the directive for a long period (old MS and Norway), secondly the number of new Member States is given.

Annex 1. Data separately for egg and meat production line

Table 1. ELITE AND GRANDPARENT FLOCKS (REARING + PRODUCTION + UNSPEZIFIED)

	Flocks tested	Salmonella	S.Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
EGG LINE					
Countries	10 (7/3) [#]	2 (2/0) ^{###}	1 (1/0) ^{###}	0 ^{###}	1 (1/0) ^{###}
N	165	3	1	0	1
MEAT LINE					
Countries	12 (9/3) [#]	2 (1/1) ^{###}	0 ^{###}	1 (0/1) ^{###}	1 (0/1) ^{###}
N	434	3	0	1	1

Table 2. PARENT FLOCKS (REARING + PRODUCTION + UNSPEZIFIED)

	Flocks tested	Salmonella	S.Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
EGG LINE					
Countries	19 (12/7) [#]	12 (8/4) ^{###}	6 (2/4) ^{###}	4 (3/1) ^{###}	9 (5/4) ^{###}
N	1522	74	24	9	33
Mean		4.9	1.6	0.6	2.2
Minimum		0	0	0	0
Maximum		33.3	33.3	2.9	33.3
Median		1.6	0	0	1.3
MEAT LINE					
Countries	20 (12/8) [#]	14 (9/5) ^{###}	12 (7/5) ^{###}	8 (6/2) ^{###}	14 (9/5) ^{###}
N	6967	416	141	84	225
Mean		6.0	2.0	1.2	3.2
Minimum		0	0	0	0
Maximum		12.8	7.9	3.2	10.5
Median		4.7	0.6	0	1.6

Table 3. PARENT FLOCKS (PRODUCTION)

	Flocks tested	Salmonella	S.Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
EGG LINE					
Countries	17 (11/6) [#]	8 (5/3) ^{###}	4 (1/3) ^{###}	3 (2/1) ^{###}	6 (3/3) ^{###}
N	1010	52	16	6	22
Mean		5.1	1.6	0.6	2.2
Minimum		0	0	0	0
Maximum		33.3	33.3	3.1	33.3
Median		0.0	0	0	0
MEAT LINE					
Countries	18 (11/7) [#]	11 (8/3) ^{###}	9 (6/3) ^{###}	5 (4/1) ^{###}	10 (7/3) ^{###}
N	4144	252	102	52	154
Mean		6.1	2.5	1.3	3.7
Minimum		0	0	0	0
Maximum		24.2	14.9	5.0	19.9
Median		1.5	0.2	0	0.7

Footnotes for Tables in Annex I

N Number of flocks tested or flocks positive for Salmonella or the respective serovar

Number of countries reporting on flocks tested

Number of countries reporting positive findings of the serovars;

In brackets, first the number of countries applying the directive for a long period (old MS and Norway), secondly the number of new Member States is given.

Table 4. PARENT FLOCKS (REARING)

	Flocks tested	Salmonella	S.Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
EGG LINE					
Countries	16 (11/5) [#]	6 (4/2) ^{###}	3 (1/2) ^{###}	2 (1/1) ^{###}	4 (2/2) ^{###}
N	345	19	7	2	9
Mean		5.5	2.0	0.6	2.6
Minimum		0	0	0	0
Maximum		33.3	33.3	7.7	33.3
Median		0	0	0	0
MEAT LINE					
Countries	17 (11/6) [#]	8 (7/1) ^{###}	4 (3/1) ^{###}	5 (4/1) ^{###}	7 (6/1) ^{###}
N	1906	91	12	14	26
Mean		4.8	0.6	0.7	1.4
Minimum		0	0	0	0
Maximum		14.3	2.4	2.6	2.7
Median		0.0	0	0	0

Table 5. PARENT FLOCKS (DAY OLD CHICKS)

	Flocks tested	Salmonella	S.Enteritidis and Typhimurium	S. Hadar, S. Infantis, S. Virchow	Top Five
EGG LINE					
Countries	14 (8/6) [#]	4 (2/2) ^{###}	2 (0/2) ^{###}	2 (1/1) ^{###}	3 (1/2) ^{###}
N	285	12	5	5	10
Mean		4.2	1.8	1.8	3.5
Minimum		0	0	0	0
Maximum		26.9	15.4	11.5	23.1
Median		0	0	0	0
MEAT LINE					
Countries	15 (8/7) [#]	7 (4/3) ^{###}	6 (3/3) ^{###}	2 (1/1) ^{###}	6 (3/3) ^{###}
N	1333	29	17	7	24
Mean		2.2	1.3	0.5	1.8
Minimum		0	0	0	0
Maximum		4.5	3.8	2.0	4.3
Median		0.7	0	0	0

Footnotes for Tables in Annex I

N Number of flocks tested or flocks positive for Salmonella or the respective serovar

Number of countries reporting on flocks tested

Number of countries reporting positive findings of the serovars;

#.### In brackets, first the number of countries applying the directive for a long period (old MS and Norway), secondly the number of new Member States is given.

Annex II. Results of minimum sampling acc. to Dir. 92/117/EEC

Table 1. All production lines – All age groups

	Total number of flocks	Flocks tested	<i>Salmonella</i> spp.	% <i>Salmonella</i> spp.	<i>S. Enteritidis</i> (SE)	% <i>S. Enteritidis</i>	<i>S. Typhimurium</i> (ST)	% <i>S. Typhimurium</i>	% SE+ ST	<i>S. Hadar</i> (SH)	<i>S. Virchow</i> (SV)	<i>S. Infantis</i> (SI)	% SH/SV/SI	% Top 5	Other serotypes	% Other serotypes
Austria	77	77	3	3,9%	1	1,3%	0	0,0%	1,3%	2	0	0	2,6%	3,9%	0	0,0%
Belgium	n.a.	823	39	4,7%	1	0,1%	4	0,5%	0,6%	1	1	9	1,3%	1,9%	23	2,8%
Germany	1097	1088	30	2,8%	0	0,0%	0	0,0%	0,0%	0	2	1	0,3%	0,3%	27	2,5%
Denmark	137	137	5	3,6%	0	0,0%	5	3,6%	3,6%	0	0	0	0,0%	3,6%	0	0,0%
Spain	945	943	105	11,1%	61	6,5%	1	0,1%	6,6%	20	3	1	2,5%	9,1%	19	2,0%
Greece	660	547	53	9,7%	4	0,7%	4	0,7%	1,5%	0	0	0	0,0%	1,5%	45	8,2%
France	2348	1475	71	4,8%	1	0,1%	1	0,1%	0,1%	0	16	4	1,4%	1,5%	49	3,3%
Finland	266	266	1	0,4%	0	0,0%	1	0,4%	0,4%	0	0	0	0,0%	0,4%	0	0,0%
Italy	282	276	15	5,4%	0	0,0%	2	0,7%	0,7%	2	0	0	0,7%	1,4%	11	4,0%
Ireland	n.a.	86	4	4,7%	0	0,0%	2	2,3%	2,3%	0	0	0	0,0%	2,3%	2	2,3%
Netherlands	n.a.	1428	25	1,8%	2	0,1%	1	0,1%	0,2%	0	15	2	1,2%	1,4%	5	0,4%
Portugal	n.a.	75	26	34,7%	21	28,0%	0	0,0%	28,0%	0	0	0	0,0%	28,0%	5	6,7%
Sweden	126	126	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
United Kingdom	n.a.	725 [#]	46	6,3%	0	0,0%	0	0,0%	0,0%	0	2	1	0,4%	0,4%	43	5,9%
Norway	213	213	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Cyprus	n.a.	28	1	3,6%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	1	3,6%
Czech Republic	189	189	7	3,7%	7	3,7%	0	0,0%	3,7%	0	0	0	0,0%	3,7%	0	0,0%
Estonia	32	32	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Hungary	n.a.	698	40	5,7%	16	2,3%	5	0,7%	3,0%	2	0	17	2,7%	5,7%	0	0,0%
Latvia	25	25	1	4,0%	1	4,0%	0	0,0%	4,0%	0	0	0	0,0%	4,0%	0	0,0%
Lithuania	189	189	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Malta	1	1	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Poland	1366	1296	81	6,3%	48	3,7%	1	0,1%	3,8%	4	4	6	1,1%	4,9%	18	1,4%
Slovak Republic	84	84	2	2,4%	1	1,2%	0	0,0%	1,2%	0	0	0	0,0%	1,2%	1	1,2%
Slovenia	100	98	3	3,1%	2	2,0%	0	0,0%	2,0%	0	0	0	0,0%	2,0%	1	1,0%
Total	8137	10925	558	5,1%	166	1,5%	27	0,2%	1,8%	31	43	41	1,1%	2,8%	250	2,3%
Isolates				558		166		27	193				115	308		250
Min				0,0%		0,0%		0,0%	0,0%				0,0%	0,0%		0,0%
Max				34,7%		28,0%		3,6%	28,0%				2,7%	28,0%		8,2%
Median				3,7%		0,1%		0,0%	0,7%				0,0%	1,5%		1,0%

[#] Figure does not include the rearing flocks as an accurate number is not available

Table 2. All production lines - Parent flocks – all

	Total number of flocks	Flocks tested	Salmonella spp.	% Salmonella spp.	S. Enteritidis	% S. Enteritidis	S. Typhimurium	% S. Typhimurium	% SE+ ST	S. Hadar	S. Virchow	S. Infantis	% SH/SV/Sl	% Top 5	Other serotypes than SH/SV/Sl	% Other serotypes than SH/SV/Sl
Austria	77	77	3	3,9%	1	1,3%	0	0,0%	1,3%	2	0	0	2,6%	3,9%	0	0,0%
Belgium	n.a.	821	39	4,8%	1	0,1%	4	0,5%	0,6%	1	1	9	1,3%	1,9%	23	2,8%
Germany	917	908	30	3,3%	0	0,0%	0	0,0%	0,0%	0	2	1	0,3%	0,3%	27	3,0%
Denmark	123	123	5	4,1%	0	0,0%	5	4,1%	4,1%	0	0	0	0,0%	4,1%	0	0,0%
Spain	945	943	105	11,1%	61	6,5%	1	0,1%	6,6%	20	3	1	2,5%	9,1%	19	2,0%
Greece	660	547	53	9,7%	4	0,7%	4	0,7%	1,5%	0	0	0	0,0%	1,5%	45	8,2%
France	2030	1281	68	5,3%	1	0,1%	1	0,1%	0,2%	0	16	4	1,6%	1,7%	46	3,6%
Finland	246	246	1	0,4%	0	0,0%	1	0,4%	0,4%	0	0	0	0,0%	0,4%	0	0,0%
Italy	277	271	13	4,8%	0	0,0%	1	0,4%	0,4%	2	0	0	0,7%	1,1%	10	3,7%
Ireland	n.a.	86	4	4,7%	0	0,0%	2	2,3%	2,3%	0	0	0	0,0%	2,3%	2	2,3%
Netherlands	n.a.	1178	15	1,3%	2	0,2%	1	0,1%	0,3%	0	5	2	0,6%	0,8%	5	0,4%
Portugal	n.a.	75	26	34,7%	21	28,0%	0	0,0%	28,0%	0	0	0	0,0%	28,0%	5	6,7%
Sweden	112	112	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
United Kingdom	n.a.	620 [#]	46	7,4%	0	0,0%	0	0,0%	0,0%	0	2	1	0,5%	0,5%	43	6,9%
Norway	199	199	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Cyprus	n.a.	28	1	3,6%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	1	3,6%
Czech Republic	178	178	7	3,9%	7	3,9%	0	0,0%	3,9%	0	0	0	0,0%	3,9%	0	0,0%
Estonia	32	32	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Hungary	610	653	39	6,0%	16	2,5%	5	0,8%	3,2%	2	0	16	2,8%	6,0%	0	0,0%
Latvia	25	25	1	4,0%	1	4,0%	0	0,0%	4,0%	0	0	0	0,0%	4,0%	0	0,0%
Lithuania	189	189	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Malta	n.a.	1	0	0,0%												
Poland	1366	1296	81	6,3%	48	3,7%	1	0,1%	3,8%	4	4	6	1,1%	4,9%	18	1,4%
Slovak Republic	80	80	2	2,5%	1	1,3%	0	0,0%	1,3%	0	0	0	0,0%	1,3%	1	1,3%
Slovenia	100	98	3	3,1%	2	2,0%	0	0,0%	2,0%	0	0	0	0,0%	2,0%	1	1,0%
Total	8167	10067	542	5,4%	141	1,4%	30	0,3%	1,7%	31	33	40	1,0%	2,7%	246	2,4%
Isolates				542		141		30	171				104	275		246
Min				0,0%		0,0%		0,0%	0,0%				0,0%	0,0%		0,0%
Max				34,7%		28,0%		4,1%	28,0%				2,8%	28,0%		8,2%
Median				3,9%		0,1%		0,0%	0,9%				0,0%	1,6%		1,1%

[#] Figure does not include the rearing flocks as an accurate number is not available

Table 3. All production lines - Parent flocks - production

	Total number of flocks	Flocks tested	Salmonella spp.	% Salmonella spp.	S. Enteritidis	% S. Enteritidis	S. Typhimurium	% S. Typhimurium	% SE+ ST	S. Hadar	S. Virchow	S. Infantis	% SH/SV/SI	% Top 5	Other serotypes than SH/SV/SI	Other serotypes than SH/SV/SI
Austria	n.a.	0	0		0		0			0	0	0			0	
Belgium	n.a.	605	30	5,0%	1	0,2%	2	0,3%	0,5%	1	1	6	1,3%	1,8%	19	3,1%
Germany	698	697	24	3,4%	0	0,0%	0	0,0%	0,0%	0	1	1	0,3%	0,3%	22	3,2%
Denmark	61	61	2	3,3%	0	0,0%	2	3,3%	3,3%	0	0	0	0,0%	3,3%	0	0,0%
Spain	517	517	105	20,3%	61	11,8%	1	0,2%	12,0%	20	3	1	4,6%	16,6%	19	3,7%
Greece	205	151	6	4,0%	0	0,0%	1	0,7%	0,7%	0	0	0	0,0%	0,7%	5	3,3%
France	1069	946	54	5,7%	1	0,1%	1	0,1%	0,2%	0	10	2	1,3%	1,5%	40	4,2%
Finland	149	149	1	0,7%	0	0,0%	1	0,7%	0,7%	0	0	0	0,0%	0,7%	0	0,0%
Italy	98	97	3	3,1%	0	0,0%	1	1,0%	1,0%	0	0	0	0,0%	1,0%	2	2,1%
Ireland	n.a.	0	0		0		0			0	0	0			0	
Netherlands	n.a.	589	14	2,4%	2	0,3%	1	0,2%	0,5%	0	5	2	1,2%	1,7%	4	0,7%
Portugal	n.a.	0	0		0		0			0	0	0			0	
Sweden	75	75	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
United Kingdom	n.a.	620	13	3,1%	0	0,0%	0	0,0%	0,0%	0	1	0	0,2%	0,2%	12	2,9%
Norway	123	123	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Cyprus	n.a.	14	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Czech Republic	89	89	4	4,5%	4	4,5%	0	0,0%	4,5%	0	0	0	0,0%	4,5%	0	0,0%
Estonia	18	18	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Hungary	n.a.	33	2	6,1%	1	3,0%	0	0,0%	3,0%	0	0	1	3,0%	6,1%	0	0,0%
Latvia	16	16	1	6,3%	1	6,3%	0	0,0%	6,3%	0	0	0	0,0%	6,3%	0	0,0%
Lithuania	58	58	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	
Malta	n.a.	0	0		0		0			0	0	0			0	
Poland	967	936	61	6,5%	39	4,2%	1	0,1%	4,3%	4	2	5	1,2%	5,4%	10	1,1%
Slovak Republic	28	28	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Slovenia	56	56	3	5,4%	2	3,6%	0	0,0%	3,6%	0	0	0	0,0%	3,6%	1	1,8%
Total	4227	5878	323	5,5%	112	1,9%	11	0,2%	2,1%	25	23	18	1,1%	3,2%	134	2,3%
Isolates				323		112		11	123				66	189		134
Min				0,0%		0,0%		0,0%	0,0%				0,0%	0,0%		0,0%
Max				20,3%		11,8%		3,3%	12,0%				4,6%	16,6%		4,2%
Median				3,3%		0,0%		0,0%	0,5%				0,0%	1,0%		0,3%

Table 4. All production lines - Parent flocks – rearing

	Total number of flocks	Flocks tested	Salmonella spp.	% Salmonella spp.	S. Enteritidis	% S. Enteritidis	S. Typhimurium	% S. Typhimurium	% SE+ ST	S. Hadar	S. Virchow	S. Infantis	% SH/SV/Sl	% Top 5	Other serotypes than SH/SV/Sl	% Other serotypes than SH/SV/Sl
Austria	n.a.	0	0		0		0			0	0	0			0	
Belgium	n.a.	216	9	4,2%	0	0,0%	2	0,9%	0,9%	0	0	3	1,4%	2,3%	4	1,9%
Germany	192	189	4	2,1%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	4	2,1%
Denmark	62	62	3	4,8%	0	0,0%	3	4,8%	4,8%	0	0	0	0,0%	4,8%	0	0,0%
Spain	302	302	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Greece	177	146	19	13,0%	2	1,4%	0	0,0%	1,4%	0	0	0	0,0%	1,4%	17	11,6%
France	961	335	14	4,2%	0	0,0%	0	0,0%	0,0%	0	6	2	2,4%	2,4%	6	1,8%
Finland	97	97	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Italy	63	63	7	11,1%	0	0,0%	0	0,0%	0,0%	1	0	0	1,6%	1,6%	6	9,5%
Ireland	n.a.	0	0		0		0			0	0	0			0	
Netherlands	n.a.	589	1	0,2%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	1	0,2%
Portugal	n.a.	0	0		0		0			0	0	0			0	
Sweden	37	37	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
United Kingdom	n.a.	207 [#]	33	16,0%	0	0,0%	0	0,0%	0,0%	0	1	1	1,0%	1,0%	31	15,0%
Norway	76	76	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Cyprus	n.a.	9	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Czech Republic	89	89	3	3,4%	3	3,4%	0	0,0%	3,4%	0	0	0	0,0%	3,4%	0	0,0%
Estonia	14	14	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Hungary	n.a.	17	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Latvia	9	9	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Lithuania	52	52	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Malta	n.a.	0	0		0		0			0	0	0			0	
Poland	399	360	20	5,6%	9	2,5%	0	0,0%	2,5%	0	2	1	0,8%	3,3%	8	2,2%
Slovak Republic	28	28	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Slovenia	44	42	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Total	2602	2939	113	3,8%	14	0,5%	5	0,2%	0,6%	1	9	7	0,6%	1,2%	77	2,6%
Isolates				113		14		5	19				17	36		77
Min				0,0%		0,0%		0,0%	0,0%				0,0%	0,0%		0,0%
Max				16,0%		3,4%		4,8%	4,8%				2,4%	4,8%		15,0%
Median				0,1%		0,0%		0,0%	0,0%				0,0%	0,0%		0,0%

[#] Estimate for the rearing flocks for the purposes of calculation

Table 5. All production lines - Parent flocks – day old chicks

	Total number of flocks	Flocks tested	Salmonella spp.	% Salmonella spp.	S. Enteritidis	% S. Enteritidis	S. Typhimurium	% S. Typhimurium	% SE+ ST	S. Hadar	S. Virchow	S. Infantis	% SH/SV/SI	% Top 5	Other serotypes than SH/SV/SI	% Other serotypes than SH/SV/SI
Austria	n.a.	0	0		0		0			0	0	0			0	
Belgium	n.a.	142	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Germany	226	226	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Denmark	62	56	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Spain	254	254	4	1,6%	2	0,8%	0	0,0%	0,8%	0	0	1	0,4%	1,2%	1	0,4%
Greece	126	118	3	2,5%	0	0,0%	2	1,7%	1,7%	0	0	0	0,0%	1,7%	1	0,8%
France	n.a.	0	0		0		0			0	0	0			0	
Finland	76	76	1	1,3%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	1	1,3%
Italy	98	98	5	5,1%	0	0,0%	1	1,0%	1,0%	0	3	0	3,1%	4,1%	1	1,0%
Ireland	n.a.	0	0		0		0			0	0	0			0	
Netherlands	n.a.	0	0		0		0			0	0	0			0	
Portugal	n.a.	0	0		0		0			0	0	0			0	
Sweden	n.a.	0	0		0		0			0	0	0			0	
United Kingdom	105	105	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Norway	n.a.	0	0		0		0			0	0	0			0	
Cyprus	n.a.	13	1	7,7%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	1	7,7%
Czech Republic	89	89	4	4,5%	4	4,5%	0	0,0%	4,5%	0	0	0	0,0%	4,5%	0	0,0%
Estonia	10	10	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Hungary	n.a.	321	13	4,0%	5	1,6%	2	0,6%	2,2%	2	1	3	1,9%	4,0%	0	0,0%
Latvia	n.a.	0	0		0		0			0	0	0			0	
Lithuania	39	39	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Malta	n.a.	0	0		0		0			0	0	0			0	
Poland	140	130	12	9,2%	7	5,4%	0	0,0%	5,4%	1	1	0	1,5%	6,9%	3	2,3%
Slovak Republic	28	28	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Slovenia	n.a.	31	0	0,0%	0	0,0%	0	0,0%	0,0%	0	0	0	0,0%	0,0%	0	0,0%
Total	1253	1736	43	2,5%	18	1,0%	5	0,3%	1,3%	3	5	4	0,7%	2,0%	8	0,5%
Isolates				43		18		5	23				12	35		8
Min				0,0%		0,0%		0,0%	0,0%				0,0%	0,0%		0,0%
Max				9,2%		5,4%		1,7%	5,4%				3,1%	6,9%		7,7%
Median				1,3%		0,0%		0,0%	0,0%				0,0%	0,0%		0,0%