

19 June 2023

***Salmonella* control programme – results for 2020: *Salmonella* Enteritidis and *Salmonella* Typhimurium amongst laying hens continues to decline**

As part of the EU-wide programme to combat *Salmonella*, the member states compile an annual report on the proportion of *Salmonella*-positive flocks in breeding poultry (*Gallus gallus*), laying hens, broilers and breeding and fattening turkeys. For the national report, the German federal states have forwarded the results of their investigations to the responsible federal authorities for evaluation since 2007. This data is used to compile the annual report on the control programme by the German Federal Institute for Risk Assessment (BfR).

Evaluation of the data for 2020 shows a minimal change in the occurrence (prevalence) of *Salmonella* for all animal species and production types considered in the report, compared to the previous year. While the detection rate was somewhat higher for breeding chickens and broilers, it declined for laying hens. The level of the previous year was maintained for breeding and fattening turkeys. Regarding the control-relevant *Salmonella* types (serovars), the control objectives were achieved for all poultry groups considered. According to the requirements of community law, *Salmonella* serovars relevant for control should be detectable in a maximum of 1 % or 2 % (laying hens) of the flocks examined.

1 Legal foundation for reporting

Article 9 (1) of Directive 2003/99/EC provides that the data on the assessment of national control programmes according to Regulation (EC) No. 2160/2003 is published annually in the report on trends and sources of zoonoses, zoonotic pathogen and antibiotic resistance.

2 Results

In the summarising evaluations, each flock is only shown once, even if it has been checked (“sampled”) several times in accordance with the specifications. The flocks examined overall, *Salmonella*-positive flocks and the proportion of positive flocks are listed in the tables of the examined animal species and production types, both in total and separately for the different examination reasons.

2.1 Salmonella control programme in breeding poultry (*Gallus gallus*)

According to Regulation (EU) No. 200/2010, a total of 912 breeding hen flocks were examined for all examination reasons (at the instigation of the food business operator and/or as part of official control) during the laying phase (Table 1). The detection rates for *Salmonella* spp. (sum of all serovars) and for the five control-relevant serovars (Top 5¹) from 2007 to 2020 are summarised in Figure 1.

Salmonella was detected in 14 flocks (1.5 %) in 2020 (Table 1). One of the five control-relevant serovars was found in four positive flocks (0.4%) (2019: three flocks, 0.4%). *S. Enteritidis* was detected in three flocks and *S. Typhimurium* was detected in one flock. In the previous year, *S. Enteritidis* had been detected in two flocks and *S. Typhimurium* in one flock. The serovars *S. Hadar* and *S. Virchow* were not discovered in 2020, as in previous years. The serovar *S. Infantis* was last detected in 2017. For 2019, the proportion of breeding hen flocks with positive detection of *Salmonella* was 0.9 %. The rising trend has thus continued in 2020.

¹ Top 5: *S. Enteritidis*, *S. Typhimurium* (including the monophasic variants), *S. Infantis*, *S. Hadar*, *S. Virchow*

Table 1: Examination of breeding poultry (*Gallus gallus*) according to Regulation (EU) No. 200/2010 in 2020

	Number of flocks examined	<i>Salmonella</i>		<i>S. Enteritidis</i>		<i>S. Typhimurium</i>		Top 5*	
		positive	%	positive	%	positive	%	positive	%
All breeds, total									
Sampling (total)	912	14	1.5	3	0.3	1	0.1	4	0.4
Of which: Sampling instigated by food business operator	910	10	1.1	3	0.3	0	0	3	0.3
Of which: Sampling in connection with official control	881	6	0.7	2	0.2	1	0.1	3	0.3
Of which laying hen parent-breeding									
Sampling (total)	88	1	1.1	0	0	0	0	0	0
Of which: Sampling instigated by food business operator	87	0	0	0	0	0	0	0	0
Of which: Sampling in connection with official control	85	1	1.2	0	0	0	0	0	0
Of which broiler parent-breeding									
Sampling (total)	660	11	1.7	3	0.3	1	0.2	4	0.5
Of which: Sampling instigated by food business operator	659	9	1.4	3	0.2	0	0	3	0.2
Of which: Sampling in connection with official control	653	4	0.6	2	0.3	1	0.2	3	0.5

* *S. Enteritidis*, *S. Typhimurium* incl. monophasic variant, *S. Hadar*, *S. Infantis* and *S. Virchow*

A total of 881 flocks of breeding chickens were examined as part of **official control** (2019: 828). *Salmonella* was detected in six flocks (0.7 %) in 2020 (Table 1). This does not constitute an increase in the *Salmonella* rate compared to the previous year (2019: eight flocks, 1.0 %). Control-relevant serovars were discovered during the official monitoring in a total of three

flocks (0.3 %; 2019: three flocks, 0.4 %). Two flocks were positive for *S. Enteritidis* and one flock for *S. Typhimurium*.

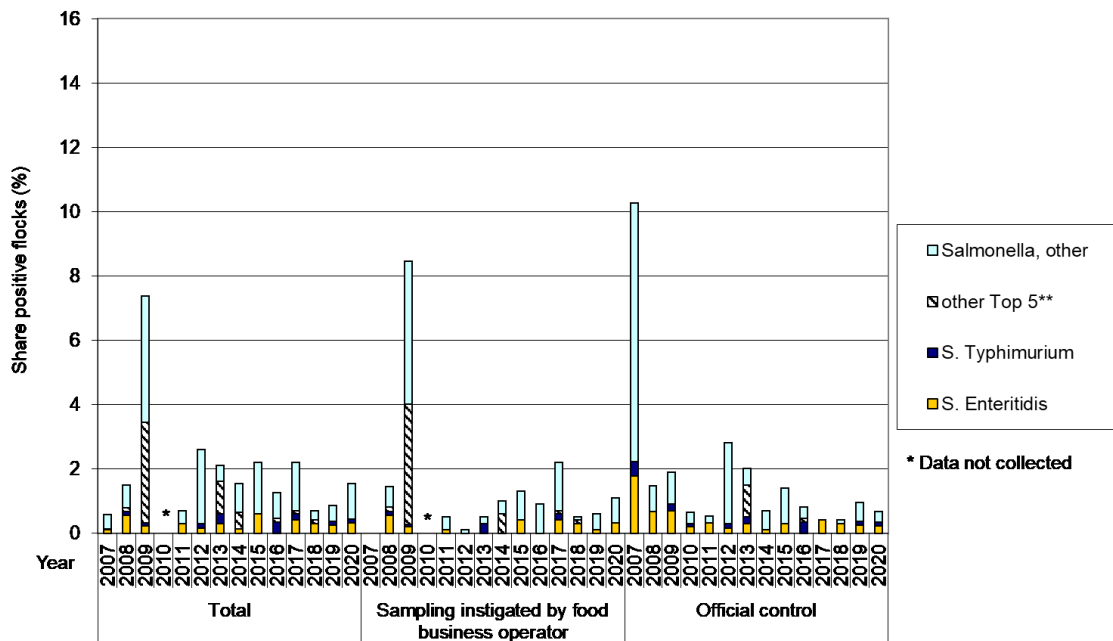
A total of 9 great-grandparent and 155 grandparent flocks were examined in 2020. *Salmonella* was detected in two of the grandparent flocks, but none were control-relevant serovars. From 2016 to 2019 no great-grandparents and grandparent flocks were found to have *Salmonella*. In contrast, *S. Enteritidis* or *S. Typhimurium* had been reported occasionally between 2013 to 2015. In 2012 and 2011, no *Salmonella* was found at these production levels.

More precise classification with regard to the production type (egg production line, meat production line) was made for all parent flocks (Table 1). *Salmonella* was detected in one of the 88 parent flocks in the egg production line (laying hen-parent breeding 1.1 %) and eleven of the 660 parent flocks in the meat production line (broiler-parent breeding 1.7 %). Control-relevant serovars were detected in four parent flocks of broiler breeders (0.5 %). *S. Enteritidis* was found in three flocks and *S. Typhimurium* in one flock.

In 2020, the situation for parent flocks of laying breeders is similar to the previous year; in each case, one non-control-relevant serovar was reported in one flock. At 1.7 % in 2020, the *Salmonella* detection rate for parent flocks of broiler breeders is again slightly above the value of the previous year (2019) at 1.2 %, but is still within the range of previous years (2018: 1.1 %, in 2017: 4.7 %, in 2016: 2.1 %, in 2015: 1.6 %, in 2014: 1.9 %).

The positive findings in the parent flocks of laying breeders or broiler breeders were made by official control and/or by internal investigations performed by the operator.

Figure 1: Proportion of flocks of breeding poultry (*Gallus gallus*) from 2007 to 2020, in which *Salmonella* was detected, separated by examination reason and year (** other Top 5 = *S. Hadar*, *S. Infantis*, *S. Virchow*)



Within the examination of breeding poultry (*Gallus gallus*) during rearing, results were reported for a total of 160 flocks examined. Most of the samples were taken at the operators' instigation. In 2020, as in previous years, *Salmonella* was not detected in any flock. In 2017, *Salmonella* was detected in a total of five flocks, two of which were *S. Typhimurium* and one of which was *S. Infantis*. In the years prior to 2017, *Salmonella* was not detected in any parent flock during the rearing phase either.

2.2 *Salmonella* control programme in laying hens

A total of 6,659 flocks were examined in accordance with Regulation (EU) No. 517/2011 in 2020. *Salmonella* was detected in 68 flocks (1.0 %) (Table 2). This situation was an improvement on the previous year's value (2019: 1.4 %). In 40 flocks of laying hens (0.6 %) (in 2019: 49 flocks, 0.8 %) *S. Enteritidis* or *S. Typhimurium* were detected in the laying phase. *S. Enteritidis* was found in 24 flocks (0.4 %; in 2019: 0.5 %) and *S. Typhimurium* in 16 (0.2 %; in 2019: 0.2 %) of the flocks examined. It is clear that in 2020 *Salmonella* detection has decreased overall, as has *S. Enteritidis* and *S. Typhimurium*. In 2019, no declining trend was achieved for *Salmonella* overall, only for the control-relevant serovars.

Table 2: Examination of laying hens (*Gallus gallus*) according to Regulation (EU) No. 517/2011 in 2020

	Number of flocks examined	<i>Salmonella</i>		<i>S. Enteritidis</i>		<i>S. Typhimurium</i>		<i>S. Enteritidis / S. Typhimurium</i>	
		positive	%	positive	%	positive	%	positive	%
Sampling (total)	6,659	68	1.0	24	0.4	16	0.2	40	0.6
Of which: Sampling instigated by food business operator	6,590	26	0.4	3	0.05	9	0.1	12	0.2
Of which: Sampling in connection with official control	3,129	47	1.5	22	0.7	8	0.3	30	1.0
Of which: Routine sampling in connection with official control	3,070	29	0.9	10	0.3	2	0.06	12	0.4
Of which: Suspected cases and follow-up investigations in connection with official control	59	18	30.5	12	20.3	6	10.2	18	30.5

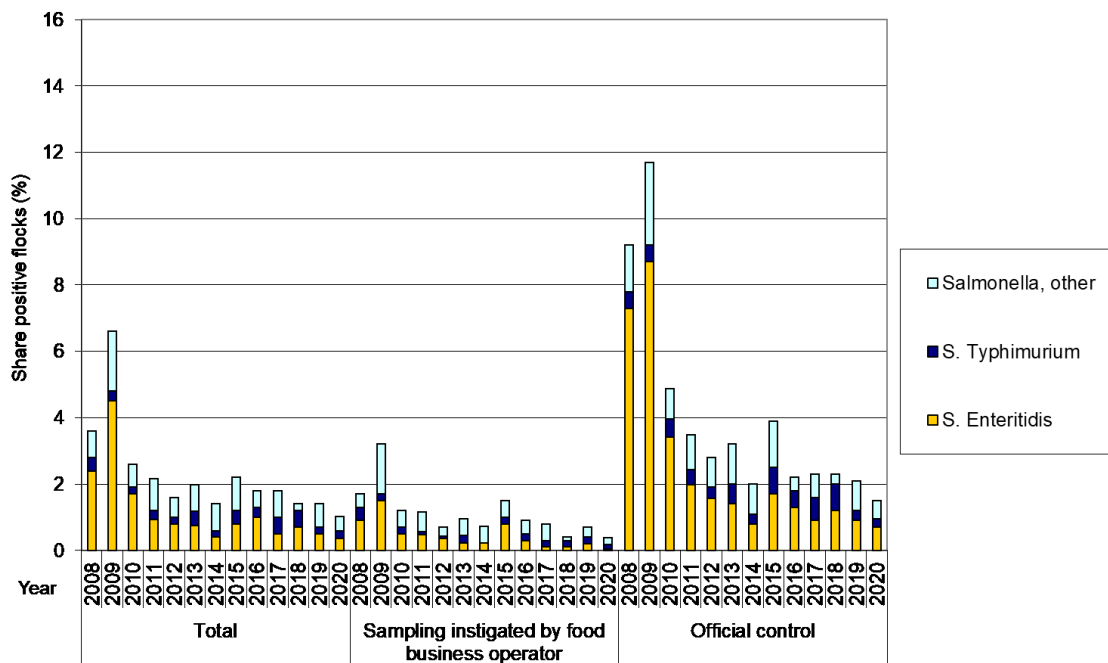
In 2020, *Salmonella* spp. was identified in the laying phase in 47 of the 3,129 laying hen flocks (1.5 %) by **official control**. *S. Enteritidis* or *S. Typhimurium* were found in 30 flocks (1.0 %). *S. Enteritidis* was isolated in 22 flocks (0.7%) and *S. Typhimurium* in eight flocks (0.3%). In 2019, as part of official control, *Salmonella* spp. was identified in 2.1 % of laying hen flocks and *S. Enteritidis* or *S. Typhimurium* was found in 1.1 % of the flocks. As a result, the detection rate for *Salmonella* and that of the two control-relevant serovars has also decreased within official control compared to the previous year.

The detection rates for laying hen flocks during the laying phase from 2008 to 2020 for *Salmonella* spp. (sum of all serovars), as well as for the serovars *S. Enteritidis* and *S. Typhimurium* are summarised in Figure 2 according to the different examination reasons.

For 2020, official controls were performed in 59 cases due to either suspicion or follow-up investigations. *Salmonella* spp. was identified in 18 of these flocks (Table 2).

When laying hens were examined during rearing, detection of *Salmonella* was reported in eleven of the total 1,013 flocks examined (1.1 %). Six flocks showed evidence of the control-relevant serovar *S. Typhimurium* and one flock *S. Enteritidis*. In 2019, two positive cases (0.2%) of *S. Enteritidis* were reported. The *Salmonella* detection rate is therefore above the level of the previous year.

Figure 2: Proportion of laying hen flocks during the laying phase from 2008 to 2020, in which *Salmonella* was detected according to examination reason and year



2.3 *Salmonella* control programme in broilers

A total of 26,224 flocks were examined. *Salmonella* was detected in 754 flocks (2.9 %) (Table 3). In 2019, 2.7 % of the flocks examined also tested positive for *Salmonella* spp. Serovars *S. Enteritidis* or *S. Typhimurium* were found in 36 flocks (0.14 %) in 2020 (2019: 26 flocks,

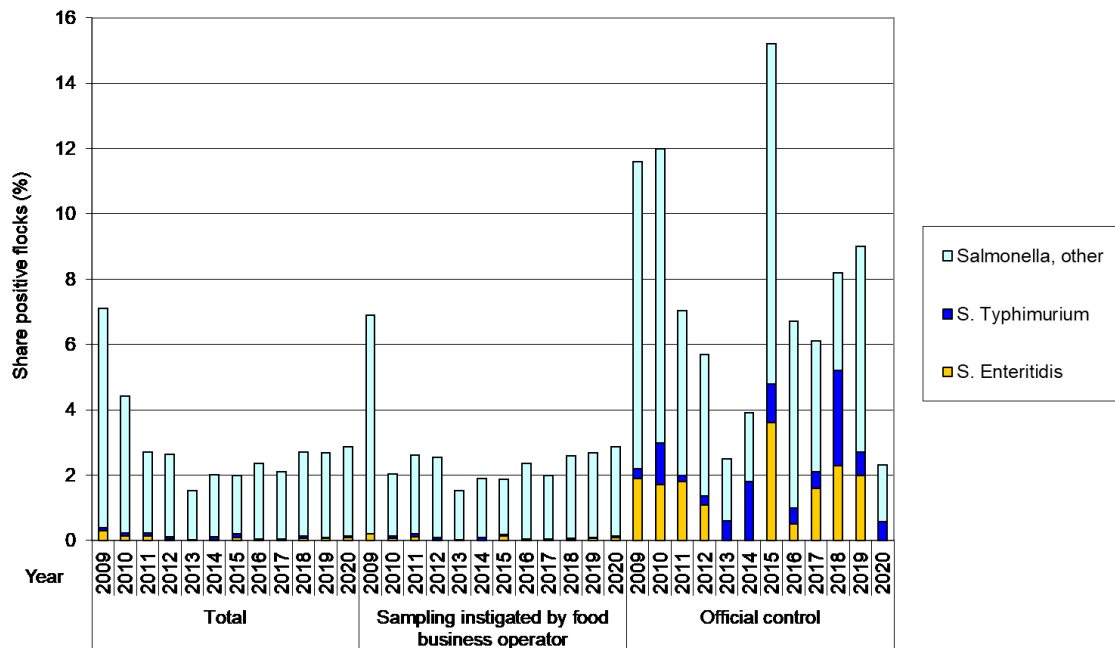
0.10 %). 24 flocks (0.09 %) exhibited *S. Enteritidis* and 12 flocks (0.05 %) *S. Typhimurium*. *S. Enteritidis* (17 flocks, 0.06 %) and *S. Typhimurium* (9 flocks, 0.03 %) were also detected in 2019 (Figure 3).

If we only consider **officially** examined flocks, 8 (2.3 %) of the 345 examined flocks were found to be positive for *Salmonella*. A control-relevant serovar was detected in 2 (0.6 %) flocks. *S. Enteritidis* was not detected in any flock and *S. Typhimurium* in 2 (0.6 %) of the flocks examined. Compared to the previous year, the detection rate for *Salmonella* in the official investigation in 2020 is significantly lower (2.3 % vs. 9.0 % in 2019). Moreover, *S. Enteritidis* was not detected in the official investigation.

Table 3: Examination of broilers (*Gallus gallus*) according to Regulation (EC) No. 200/2012 in 2020

	Number of flocks examined	<i>Salmonella</i>		<i>S. Enteritidis</i>		<i>S. Typhimurium</i>		<i>S. Enteritidis / S. Typhimurium</i>	
		positive	%	positive	%	positive	%	positive	%
Sampling (total)	26,224	754	2.9	24	0.09	12	0.05	36	0.14
Of which: Sampling instigated by food business operator	26,186	751	2.9	24	0.09	11	0.04	35	0.13
Of which: Sampling in connection with official control	345	8	2.3	0	0	2	0.6	2	0.6

Figure 3: Proportion of broiler flocks from 2009 to 2020, in which *Salmonella* was detected according to examination reason and year



2.4 *Salmonella* control programme for breeding turkeys

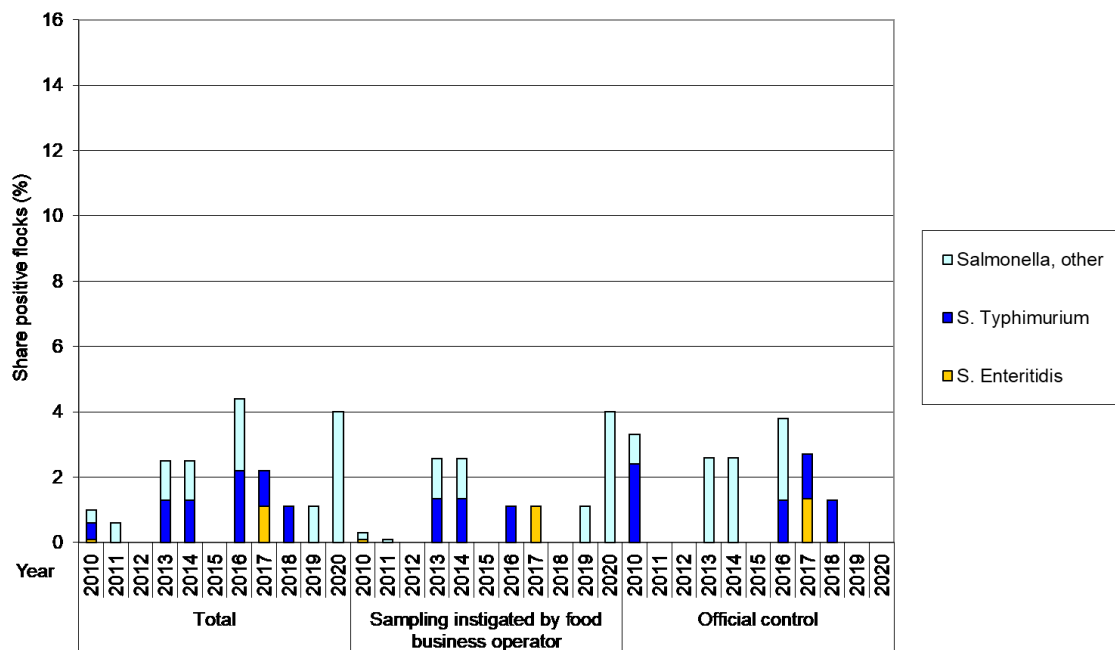
In total, examinations of 97 breeding turkey flocks were reported. Of these flocks, four flocks (4.1 %) were positive for *Salmonella* in 2020 (Table 4). No control-relevant serovar was detected in these flocks. Positive flocks were identified during investigations performed by the food business operator. In 2019, one positive flock (1.1%) was reported during this type of sampling. This was again not a control-relevant serovar (Figure 4).

Table 4: Examination of breeding turkeys according to Regulation (EC) No. 1190/2012 in 2020

	Number of flocks examined	<i>Salmonella</i>		<i>S. Enteritidis</i>		<i>S. Typhimurium</i>		<i>S. Enteritidis / S. Typhimurium</i>	
		positive	%	positive	%	positive	%	positive	%
Sampling (total)	97	4	4.1	0	0	0	0	0	0
Of which: Sampling instigated by food business operator	97	4	4.1	0	0	0	0	0	0
Of which: Sampling in connection with official control	68	0	0	0	0	0	0	0	0

Salmonella was found in four of the 36 flocks examined during rearing. No control-relevant serovars were detected. Four positive flocks were also discovered in 2019. *S. Enteritidis* was last reported in a rearing flock in 2017.

Figure 4: Proportion of breeding turkey flocks from 2010 to 2020, in which *Salmonella* was detected according to examination reason and year



2.5 *Salmonella* control programme in fattening turkeys

A total of 4,784 fattening turkey flocks were examined in accordance with Regulation (EU) No. 1190/2012 (Table 5). Of these flocks, 17 (0.4 %) were positive for *Salmonella* spp. In 2020, control-relevant serovars were detected in four flocks. It concerned *S. Typhimurium* (3 flocks, 0.06 %) and *S. Enteritidis* (1 flock, 0.02 %). In the previous year, 0.4 % of fattening turkey flocks examined also tested positive for *Salmonella*. As regards control-relevant serovars, only *S. Typhimurium* was detected in 2019 (6 flocks, 0.1 %), but not *S. Enteritidis* (Figure 5).

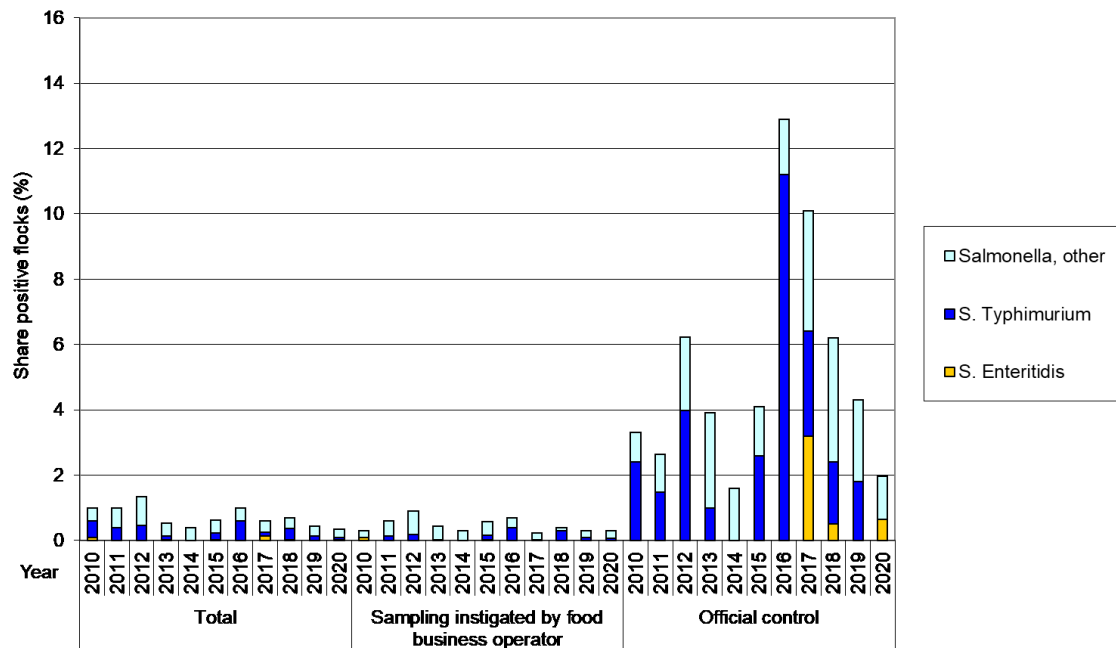
Table 5: Examination of fattening turkeys according to Regulation (EU) No. 1190/2012 in 2020

	Number of flocks examined	<i>Salmonella</i>		<i>S. Enteritidis</i>		<i>S. Typhimurium</i>		<i>S. Enteritidis / S. Typhimurium</i>	
		positive	%	positive	%	positive	%	positive	%
Sampling (total)	4,784	17	0.4	1	0.02	3	0.06	4	0.08
Of which: Sampling instigated by food business operator	4,778	14	0.3	0	0	3	0.06	3	0.06
Of which: Sampling in connection with official control	152	3	2.0	1	0.7	0	0	1	0.7

A high proportion of positive flocks (2.0 %) was still reported in the **official control**, albeit less than in 2019 (4.3 %) and significantly less than in previous years.

Overall, the detection rates for *Salmonella* in 2020 are therefore at a comparable level to the previous year.

Figure 5: Proportion of fattening turkey flocks from 2010 to 2020, in which *Salmonella* was detected according to examination reason and year



3 Summary

The results forwarded by the federal states as part of the control programmes according to Regulation (EC) No. 2160/2003 were summarised for reporting at the federal level. For 2020, they document a comparable or slightly higher (breeding chickens) prevalence of *Salmonella* for all animal species and production types considered compared to the previous year. In relation to the control-relevant serovars, the community target value was achieved for all poultry groups included in the control programs. For breeding hens, broilers as well as breeding and fattening turkeys, a prevalence of less than 1% was achieved for the control-relevant serovars, for laying hens the prevalence of 0.6 % was under the target value of 2%.

S. Enteritidis and/or *S. Typhimurium* were reported across all animal species and production types in 2020. *S. Infantis* was again only detected in broilers, but not in breeding hen flocks. In broilers, this serovar is not one of the control-relevant serovars.

Salmonella was detected in 1.5 % of breeding hen flocks in 2020, 0.4 % of the flocks tested positive for a control-relevant serovar. Therefore, no improvement of the situation was achieved in 2020; on the contrary, a slightly increasing trend for *Salmonella* can be seen.

There was a decline in *Salmonella* prevalence and control-relevant serovars recorded for flocks of laying hens in 2020. This concerned both *S. Enteritidis* and *S. Typhimurium*.

In broilers, a further increase in *Salmonella* prevalence was observed in 2020, relating to all reasons for investigation. As in previous years, broilers dominated the non-control-relevant serovar *S. Infantis* in all studies.

In 2020, no control-relevant *Salmonella* was found in breeding turkey flocks. However, detection of other serovars was reported for four flocks.

The observed *Salmonella* prevalence (0.4 %) in fattening turkey flocks in 2020 is comparable to the previous year's value. *S. Typhimurium* was detected and in 2020, *S. Enteritidis* was reported in one flock.

Further information on *Salmonella* is available on the BfR website

Salmonella topic page

https://www.bfr.bund.de/en/salmonella_and_their_importance_as_pathogens-10638.html

About the BfR

The German Federal Institute for Risk Assessment (BfR) is a scientifically independent institution within the portfolio of the German Federal Ministry of Food and Agriculture (BMEL). The BfR advises the Federal Government and the German federal states (“Laender”) on questions of food, chemicals, and product safety. The BfR conducts independent research on topics that are closely linked to its assessment tasks.

This text version is a translation of the original German text which is the only legally binding version.

Imprint

Publisher:

German Federal Institute for Risk Assessment

Max-Dohrn-Straße 8–10

10589 Berlin

T +49 30 18412-0

F +49 30 18412-99099

bfr@bfr.bund.de

bfr.bund.de/en

Institution under public law

Represented by the President Professor Dr Dr Andreas Hensel

Supervisory authority: German Federal Ministry of Food and Agriculture

VAT ID no.: DE 165 893 448

Responsible according to the German Press Law: Dr Suzan Fiack



CC-BY-ND

BfR | Risiken erkennen –
Gesundheit schützen