

Chapter 2.3

REPORTS OF *SALMONELLA* IN PIGS

Following many years of decline, there was some evidence of a bottoming out in the UK pig industry during 2004. The June census and slaughterhouse surveys showed that there were 515,000 breeding sows, and 9.13 million clean pigs slaughtered - both figures remain at a similar level to the previous year. The proportion of pork imported remained high in 2004, though there was a decline in the last few months of the year. Exports rose by 21%.

There were a total of 1,654 pig diagnostic submissions to VLA during 2004, a decline of 12%. There was also a 16% decrease in the number of *Salmonella* incidents reported from 194 incidents in 2003 to 162 incidents in 2004. These figures are the lowest in the last six years.

The results of a Great Britain wide abattoir survey for foodborne pathogens carried out during 2003 were reported. *Salmonella* was cultured from the caecal contents of 23% of pigs (see Chapter 3). This had not changed since the previous survey in 1999/2000.

The ZAP (Zoonoses Action Plan) Scheme, set up by the British Pig Executive entered its third year. ZAP monitors *Salmonella* at all assured abattoirs through the meatjuice ELISA test for Group B and Group C1 *Salmonella*. Approximately 23% of 143,000 pigs sampled in the year to June 2004 were seropositive. This compares with 25% of 83,000 sampled during the previous 12 months. In the same scheme, farms are allocated a "ZAP score" according to the prevalence of seropositive pigs (see score details from Chapter 2.3 of last year's book). More information can be found on the British Pig Executive website www.bpex.org.

Defra is funding the VLA and SAC to offer free veterinary support visits to all units with high ZAP scores. Uptake of these visits was initially low, however this increased towards the end of the year. A range of recommendations were made to individual farmers based on the risk factors identified. VLA was also involved in testing control strategies on individual farms, and in linking ZAP scheme and assurance scheme data to examine farm level risk factors for *Salmonella* infection in pigs. Recruitment at finisher units also began for a large intervention study testing an increased hygiene and biosecurity programme. This research is expected to be completed in 2006.

Table 31 gives the overall number of *Salmonella* incidents and isolations for pigs in 2004, and Table 32 compares the proportions of the most frequent serovars over the past 5 years. *Salmonella* Typhimurium is still

the most commonly reported serovar, having been isolated from 65% of incidents, down nearly 7% from the past 2 years. *Salmonella* Derby was again the second most common serovar and was found in 16.7% of all incidents, approximately the same as 2003.

The serovars *S. Durham* and *S. Give* were added to Table 31 following isolation for the first time in the past five years. *Salmonella Give* was last found in pigs in Great Britain in 1998, and there is no earlier report of *Salmonella Durham* in this species. The serovars *S. Havana*, *S. Kissi*, *S. Lille*, *S. Poona*, *S. Stanley* and *S. Stanleyville* have not been isolated since 1999, and no longer appear in Table 31.

The number of definitive phage types of *S. Typhimurium* isolated is given in Table 33. The most commonly reported phage type, for the second year running, was U288 (53% of incidents) followed by U193 (18%) and DT104 (10%). DT40, DT56, DT41, and U314 were all reported for the first time in the last five years and were added to the table, whilst DT20 which was last found in 1999 was dropped.

Table 31: *Salmonella* in pigs on all premises

<i>Salmonella</i> Incidents (Isolations)	2000		2001*		2002		2003		2004	
ENTERICA ENTERICA										
Agama	2	(2)	-	(-)	-	(-)	-	(-)	-	(-)
Agona	2	(2)	-	(-)	1	(1)	1	(1)	-	(-)
Ajiobo	-	(-)	-	(-)	1	(1)	-	(-)	-	(-)
Anatum	1	(4)	-	(-)	1	(1)	-	(-)	-	(-)
Bovis morbificans	-	(-)	1	(1)	1	(1)	-	(-)	-	(-)
Brandenburg	-	(-)	2	(2)	-	(-)	-	(-)	1	(1)
Bredeney	1	(1)	-	(-)	-	(-)	-	(-)	-	(-)
Cerro	1	(1)	-	(-)	-	(-)	-	(-)	-	(-)
Choleraesuis	1	(1)	-	(-)	-	(-)	-	(-)	1	(1)
Choleraesuis-vk	-	(-)	1	(1)	-	(-)	-	(-)	-	(-)
Derby	34	(44)	26	(27)	16	(16)	30	(33)	27	(28)
Dublin	-	(-)	1	(1)	2	(2)	-	(-)	2	(2)
Durham	-	(-)	-	(-)	-	(-)	-	(-)	1	(1)
Enteritidis	-	(-)	2	(2)	1	(1)	2	(2)	-	(-)
Give	-	(-)	-	(-)	-	(-)	-	(-)	2	(2)
Goldcoast	5	(5)	3	(3)	4	(4)	1	(1)	5	(5)
Hadar	-	(-)	-	(-)	-	(-)	1	(1)	-	(-)
Heidelberg	2	(2)	1	(1)	-	(-)	1	(1)	-	(-)
Idikan	-	(-)	-	(-)	-	(-)	1	(1)	-	(-)
Indiana	1	(1)	-	(-)	-	(-)	-	(-)	-	(-)
Infantis	1	(1)	1	(1)	2	(2)	-	(-)	2	(2)
Kedougou	12	(12)	14	(14)	10	(11)	7	(7)	5	(5)
Kimuenza	-	(-)	-	(-)	1	(1)	-	(-)	-	(-)
Livingstone	2	(2)	-	(-)	-	(-)	-	(-)	-	(-)
London	2	(2)	1	(1)	5	(5)	3	(3)	4	(4)
Manhattan	-	(-)	-	(-)	-	(-)	1	(1)	-	(-)
Mbandaka	-	(-)	1	(1)	1	(1)	-	(-)	-	(-)
Montevideo	-	(-)	-	(-)	-	(-)	1	(3)	-	(-)
Muenchen	1	(1)	-	(-)	-	(-)	-	(-)	-	(-)
Newport	2	(2)	3	(3)	-	(-)	-	(-)	-	(-)
Panama	3	(4)	1	(1)	2	(2)	-	(-)	-	(-)
Reading	2	(2)	1	(1)	5	(5)	6	(6)	6	(6)
Saint Paul	-	(-)	-	(-)	-	(-)	1	(1)	-	(-)
Senftenberg	1	(1)	-	(-)	-	(-)	-	(1)	-	(-)

Table 31: *Salmonella* in pigs on all premises

<i>Salmonella</i> Incidents (Isolations)	2000		2001*		2002		2003		2004	
ENTERICA ENTERICA										
Taksony	-	(-)	2	(2)	-	(-)	-	(-)	-	(-)
Thompson	1	(1)	-	(-)	-	(-)	-	(-)	-	(-)
Typhimurium	248	(287)	134	(152)	147	(156)	137	(161)	105	(135)
Virchow	-	(-)	1	(1)	-	(-)	-	(-)	-	(-)
UNSPECIFIED										
structure only	2	(2)	5	(5)	5	(5)	1	(2)	1	(2)
rough strain	1	(1)	1	(1)	2	(2)	-	(-)	-	(-)
Untyped	2	(2)	-	(-)	-	(-)	-	(-)	-	(-)
TOTAL	330	(383)	202	(221)	207	(217)	194	(225)	162	(194)

* 2001 data may not be comparable due to impact of FMD epidemic

Fig 23: Incidents of *Salmonella* serotypes in pigs in 2004

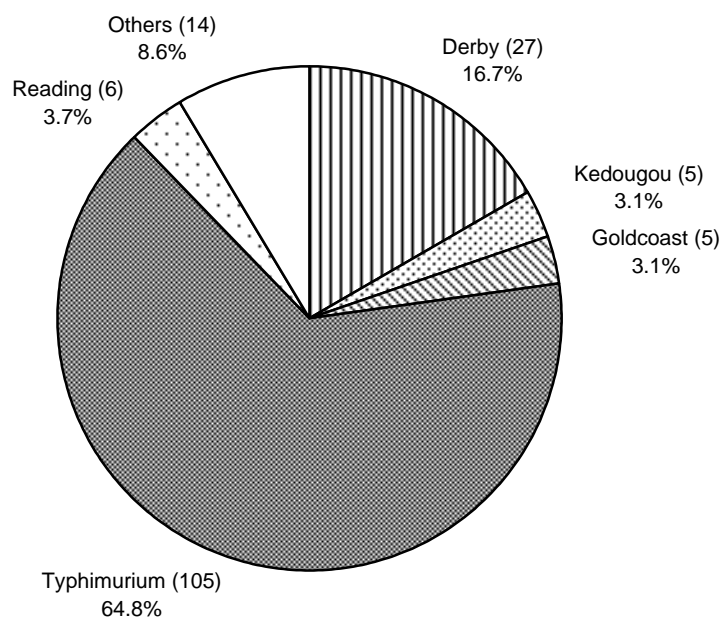
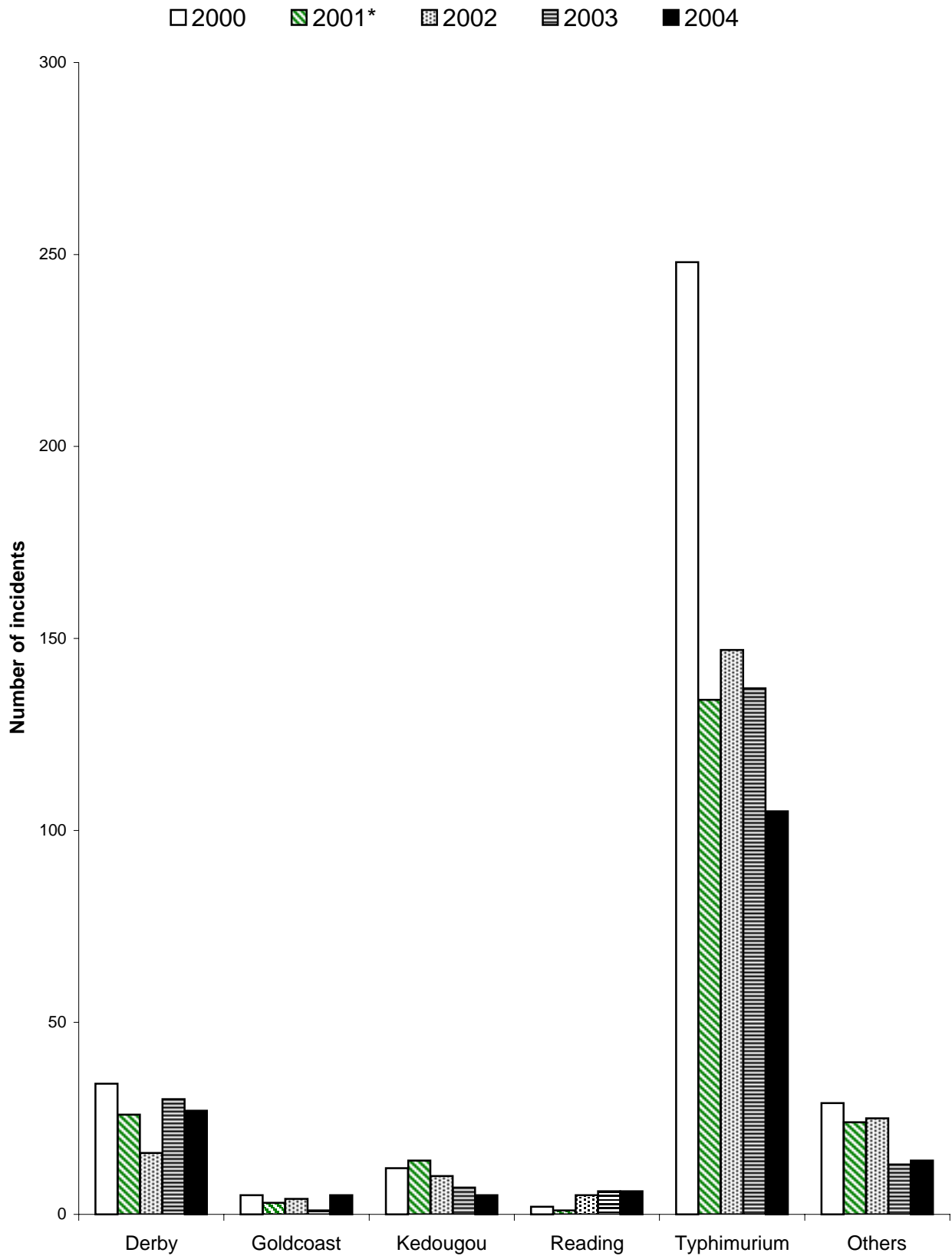


Table 32: Incidents of the top 4 *Salmonella* serotypes in pigs in 2004 as a % of all incidents compared to previous years

Serotype	2000	2001	2002	2003	2004
S. Typhimurium %	75.2	66.3	71.0	71.0	64.8
S. Derby %	10.3	12.9	7.7	15.5	16.7
S. Reading %	0.6	0.5	2.4	3.1	3.7
S. Goldcoast %	1.5	1.5	1.9	0.5	3.1
S. Kedougou %	3.6	6.9	4.8	3.6	3.1
Total no. incidents	330	202	207	194	162

Fig 24: Incidents of *Salmonella* serotypes in pigs (2000 - 2004)



* 2001 data may not be comparable due to uncertain impact of FMD epidemic

Table 33: S. Typhimurium in pigs on all premises

Definitive Types Incidents (Isolations)	2000	2001*	2002	2003	2004
2	1 (1)	1 (1)	1 (1)	- (-)	- (-)
12	4 (7)	2 (2)	2 (2)	2 (2)	1 (1)
12a	- (-)	- (-)	- (-)	1 (1)	- (-)
40	- (-)	- (-)	- (-)	- (-)	1 (1)
41	- (-)	- (-)	- (-)	- (-)	1 (1)
56	- (-)	- (-)	- (-)	- (-)	1 (1)
99	- (-)	- (-)	- (-)	1 (1)	- (-)
104	53 (72)	13 (15)	19 (22)	21 (21)	10 (10)
104a	- (-)	- (-)	- (-)	1 (1)	- (-)
104b	6 (7)	4 (4)	2 (2)	4 (4)	3 (3)
108	1 (1)	1 (1)	- (-)	- (-)	- (-)
120	- (-)	2 (2)	- (-)	1 (1)	1 (1)
126A	1 (1)	- (-)	- (-)	- (-)	- (-)
146	- (-)	- (-)	- (-)	1 (1)	- (-)
170	4 (4)	- (-)	- (-)	- (1)	- (-)
193	28 (34)	17 (19)	20 (23)	25 (27)	19 (20)
193A	- (-)	- (-)	3 (3)	2 (2)	1 (1)
195	- (-)	- (-)	- (-)	1 (1)	- (-)
203	2 (3)	- (-)	- (-)	- (1)	- (-)
206	- (-)	1 (1)	- (-)	- (-)	- (-)
208	33 (35)	14 (15)	9 (9)	6 (6)	3 (3)
U288	- (-)	- (-)	8 (9)	51 (52)	56 (58)
U302	38 (41)	16 (17)	13 (13)	16 (16)	3 (3)
U308	20 (21)	10 (13)	8 (8)	2 (2)	2 (2)
U308A	8 (9)	17 (21)	16 (17)	- (-)	- (-)
U310	1 (1)	11 (13)	7 (7)	1 (1)	2 (2)
U314	- (-)	- (-)	- (-)	- (-)	1 (1)
U315	- (-)	- (-)	- (-)	1 (1)	- (-)
untypeable	- (-)	- (-)	- (-)	- (2)	- (-)
RDNC	10 (10)	5 (5)	5 (5)	- (5)	- (4)
NOPT	- (-)	- (-)	1 (1)	- (-)	- (-)
UNTY	37 (40)	19 (22)	13 (13)	- (8)	- (9)
untyped	- (-)	1 (1)	20 (21)	- (4)	- (14)
TOTAL	247 (287)	134 (152)	147 (156)	137 (161)	105 (135)

* 2001 data may not be comparable due to impact of FMD epidemic

Table 34: S. Enteritidis in pigs on all premises

Phage Types Incidents (Isolations)	2000	2001*	2002	2003	2004
4	- (-)	1 (1)	- (-)	1 (1)	- (-)
8	- (-)	1 (1)	1 (1)	- (-)	- (-)
35	- (-)	- (-)	- (-)	1 (1)	- (-)
TOTAL	- (-)	2 (2)	1 (1)	2 (2)	- (-)

Table 35: S. Hadar in pigs on all premises

Phage Types Incidents (Isolations)	2000	2001*	2002	2003	2004
4	- (-)	- (-)	- (-)	1 (1)	- (-)
TOTAL	- (-)	- (-)	- (-)	1 (1)	- (-)

Table 36: S. Virchow in pigs on all premises

Phage Types Incidents (Isolations)	2000	2001*	2002	2003	2004
26	- (-)	1 (1)	- (-)	- (-)	- (-)
TOTAL	- (-)	1 (1)	- (-)	- (-)	- (-)

* 2001 data may not be comparable due to impact of FMD epidemic

Fig 25: Incidents of *Salmonella* Typhimurium definitive types in pigs in 2004

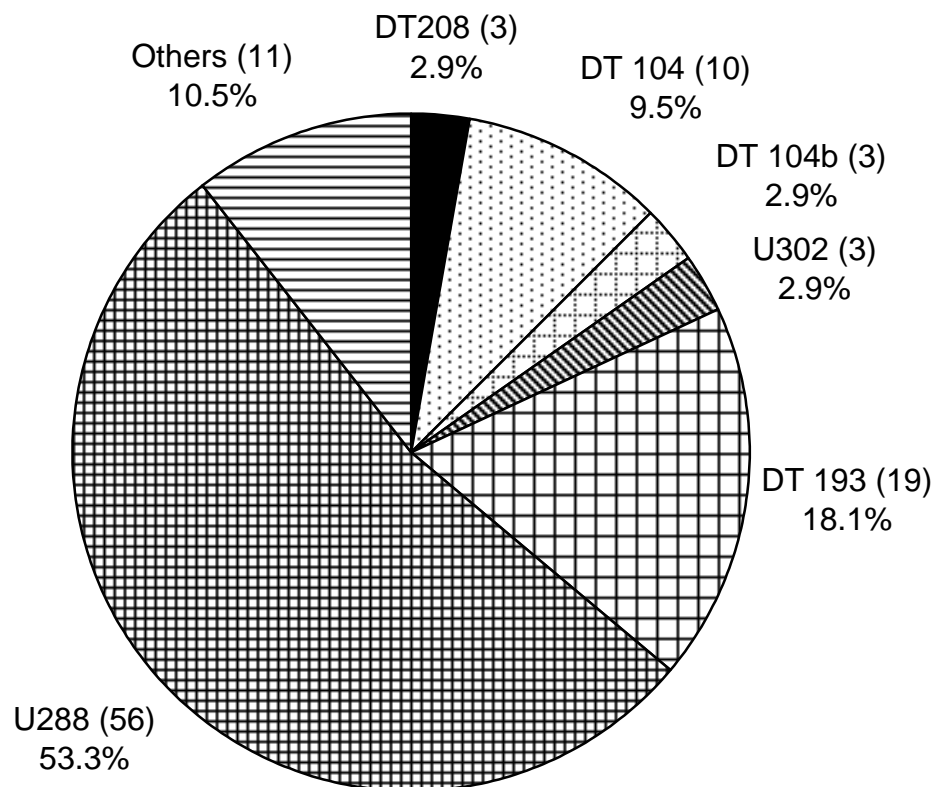
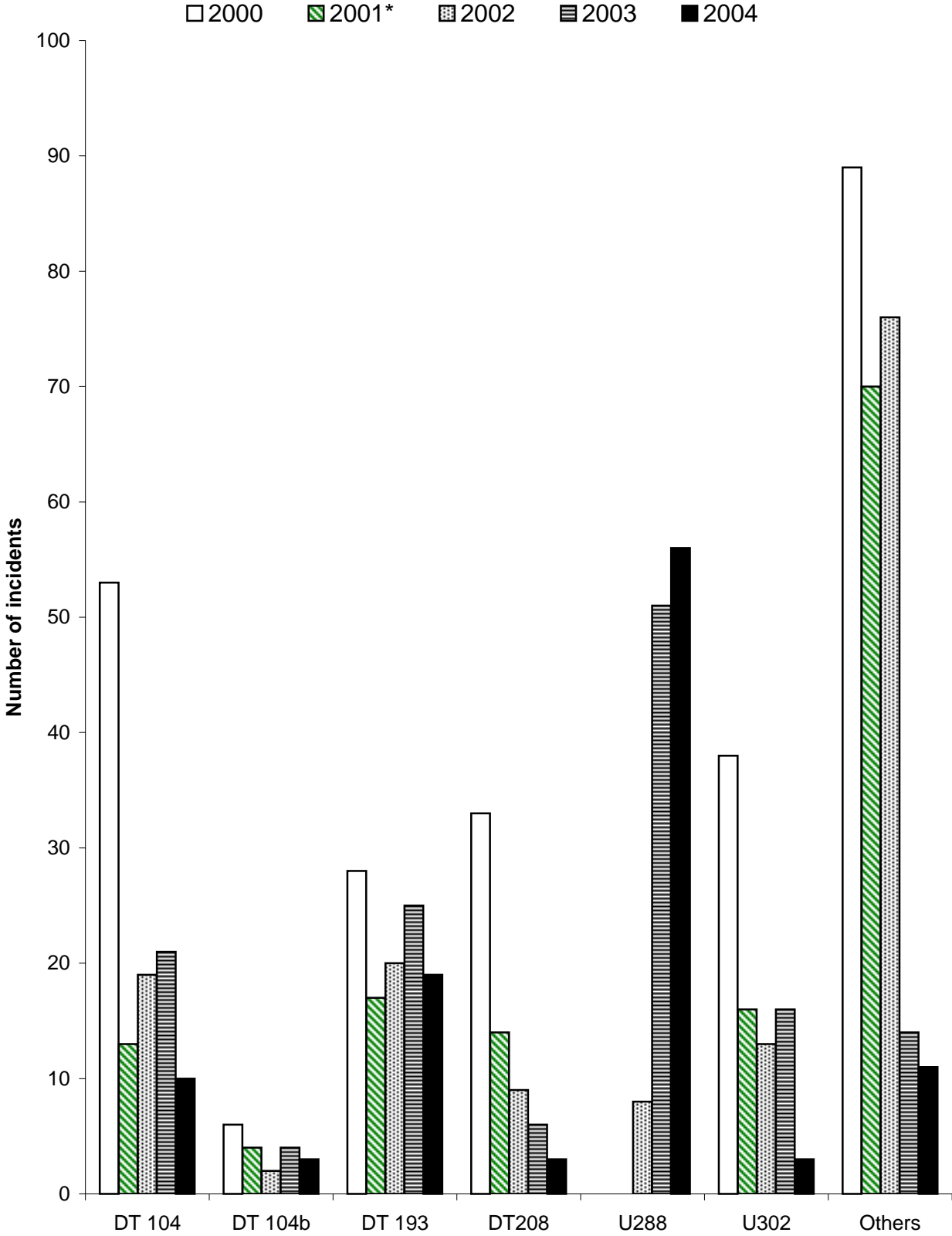


Fig 26: Incidents of *Salmonella* Typhimurium definitive types in pigs (2000 - 2004)



* 2001 data may not be comparable due to uncertain impact of FMD epidemic

Fig 27: S. Enteritidis, S. Typhimurium and S. Derby as a proportion of all incident reports in pigs (1985 - 2004)

