

## Chapter 2.3

### REPORTS OF *SALMONELLA* IN PIGS

The June 2005 census showed a decline of 7% in the breeding herd over the year, ending at 441,000. The number of pigs for slaughtering ended at 4,194,999 which is less than a 1% reduction, reflecting improvements in performance indicators. More than 70% of finishing herds are now members of the British Pig Health Scheme, giving early warning of emerging disease problems, which is thought to have contributed to this. Imports of pork and pork products reached 858,000 tonnes in 2005 – an increase of 35% since 2001.

There were a total of 1,565 pig diagnostic submissions to VLA and SAC during 2005, a decline of 5%. There was a small increase in the number of *Salmonella* incidents reported from 179 incidents in 2004 to 183 incidents in 2005.

The ZAP (Zoonoses Action Plan) Scheme, set up by the British Pig Executive to monitor *Salmonella* antibody levels at all assured abattoirs, entered its fourth year. In the year to June 2005, 22.2% of 140,328 meat juice samples collected were seropositive, compared with 23.2% and 25.3% in the preceding two years.

[http://www.bpex.org/technical/zap/ZAP\\_AnnualReport05.pdf](http://www.bpex.org/technical/zap/ZAP_AnnualReport05.pdf).

There are strong regional variations in these figures, with considerably lower overall seroprevalence in Scotland and Northern Ireland. The levels required for a unit to be given a high ZAP score are to be lowered during 2006 - this is expected to increase the number of producers who are required to take action to reduce their *Salmonella* levels.

Several VLA veterinarians were involved in Defra funded advisory visits to high ZAP score farms that requested them. A total of 34 visits were carried out during the year, and over 1,500 individual samples were collected. *Salmonella* serotypes, similar to those isolated from diagnostic submissions, were isolated from pig faeces and throughout the farm environment. These reports are excluded from the tables of this publication. Problems frequently identified on the units included inadequate cleaning and disinfection, poor management of sick pigs, and concerns around rodent control. The VLA were also involved in a nationwide study testing a biosecurity and hygiene intervention program on around 50 units. A large number of abattoir samples were also collected from a subset of these farms. Laboratory and data analysis of these projects will be progressed during 2006. Efforts were made to publicise all of these projects within the industry; and to encourage feedback, uptake of visits, and participation in research.

Table 31 gives the overall number of *Salmonella* incidents and isolations for pigs in 2005, and Table 32 compares the proportions of the most frequent serovars over the past 5 years. *Salmonella* Typhimurium is still the most commonly found, having been isolated from 69% of incidents. *Salmonella* Derby was again the second most common serovar, being found in 13% of all incidents. Both these levels are approximately the same as 2004.

The serovar S.Ohio was added to Table 31, having been found for the first time in the past five years. The serovars S. Agama, S. Bredeney, S. Cerro, S. Indiana, S. Livingstone, S. Muenchen and S. Thompson have not been isolated since 2000, and have all been dropped from the table.

The number of definitive phage types of S.Typhimurium isolated is given in Table 33. The most commonly isolated definitive type was, for the third year running, U288 (41% of incidents) followed by U193 (23%) and U302 (7%). DT141 and U309 were found for the first time in the past five years and were added to the table, whilst DT 126a, which was last found in 2000, was dropped.

**Table 30: *Salmonella* in pigs on all premises**

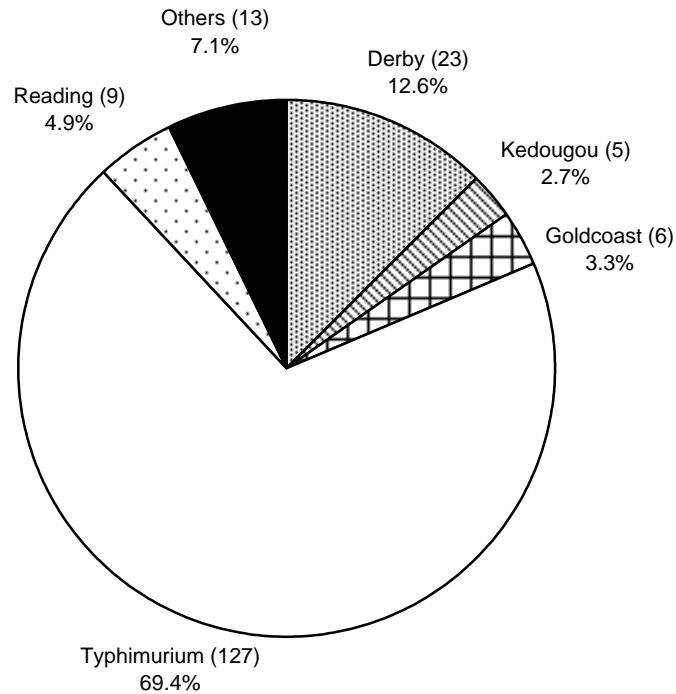
<i>Salmonella</i> Incidents (Isolations)	2001*	2002	2003	2004	2005
<b>ENTERICA ENTERICA</b>					
Agona	- ( -)	1 ( 1)	1 ( 1)	- ( -)	- ( -)
Ajiobo	- ( -)	1 ( 1)	- ( -)	- ( -)	- ( -)
Anatum	- ( -)	1 ( 1)	- ( -)	- ( -)	- ( -)
Bovis morbificans	1 ( 1)	1 ( 1)	- ( -)	- ( -)	- ( -)
Brandenburg	2 ( 2)	- ( -)	- ( -)	1 ( 1)	- ( -)
Choleraesuis	- ( -)	- ( -)	- ( -)	1 ( 1)	1 ( 1)
Choleraesuis-vk	1 ( 1)	- ( -)	- ( -)	- ( -)	- ( -)
Derby	26 ( 27)	16 ( 16)	27 ( 32)	23 ( 28)	23 ( 24)
Dublin	1 ( 1)	2 ( 2)	- ( -)	2 ( 2)	- ( -)
Durham	- ( -)	- ( -)	- ( -)	1 ( 1)	- ( -)
Enteritidis	2 ( 2)	1 ( 1)	2 ( 2)	- ( -)	- ( -)
Give	- ( -)	- ( -)	- ( -)	2 ( 2)	1 ( 1)
Goldcoast	3 ( 3)	4 ( 4)	1 ( 1)	5 ( 5)	6 ( 6)
Hadar	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
Heidelberg	1 ( 1)	- ( -)	1 ( 1)	- ( -)	- ( -)
Idikan	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
Infantis	1 ( 1)	2 ( 2)	- ( -)	2 ( 2)	- ( -)
Kedougou	14 ( 14)	10 ( 11)	7 ( 7)	5 ( 5)	5 ( 5)
Kimuenza	- ( -)	1 ( 1)	- ( -)	- ( -)	- ( -)
London	1 ( 1)	5 ( 5)	2 ( 3)	4 ( 4)	2 ( 2)
Manhattan	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
Mbandaka	1 ( 1)	1 ( 1)	- ( -)	- ( -)	- ( -)
Montevideo	- ( -)	- ( -)	1 ( 3)	- ( -)	- ( -)
Newport	3 ( 3)	- ( -)	- ( -)	- ( -)	1 ( 1)
Ohio	- ( -)	- ( -)	- ( -)	- ( -)	1 ( 1)
Panama	1 ( 1)	2 ( 2)	- ( -)	- ( -)	- ( -)
Reading	1 ( 1)	5 ( 5)	6 ( 6)	6 ( 6)	9 ( 9)
Saint Paul	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
Senftenberg	- ( -)	- ( -)	- ( 1)	- ( -)	- ( -)
Taksony	2 ( 2)	- ( -)	- ( -)	- ( -)	- ( -)
Typhimurium	134 ( 152)	147 ( 156)	139 ( 157)	126 ( 135)	127 ( 137)

**Table 30: *Salmonella* in pigs on all premises**

<i>Salmonella</i> Incidents (Isolations)	2001*	2002	2003	2004	2005
ENTERICA ENTERICA					
Virchow	1 ( 1)	- ( -)	- ( -)	- ( -)	- ( -)
UNSPECIFIED					
structure only	5 ( 5)	5 ( 5)	2 ( 2)	1 ( 1)	5 ( 6)
rough strain	1 ( 1)	2 ( 2)	- ( -)	- ( -)	2 ( 2)
TOTAL	202 ( 221)	207 ( 217)	192 ( 220)	179 ( 193)	183 ( 192)

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

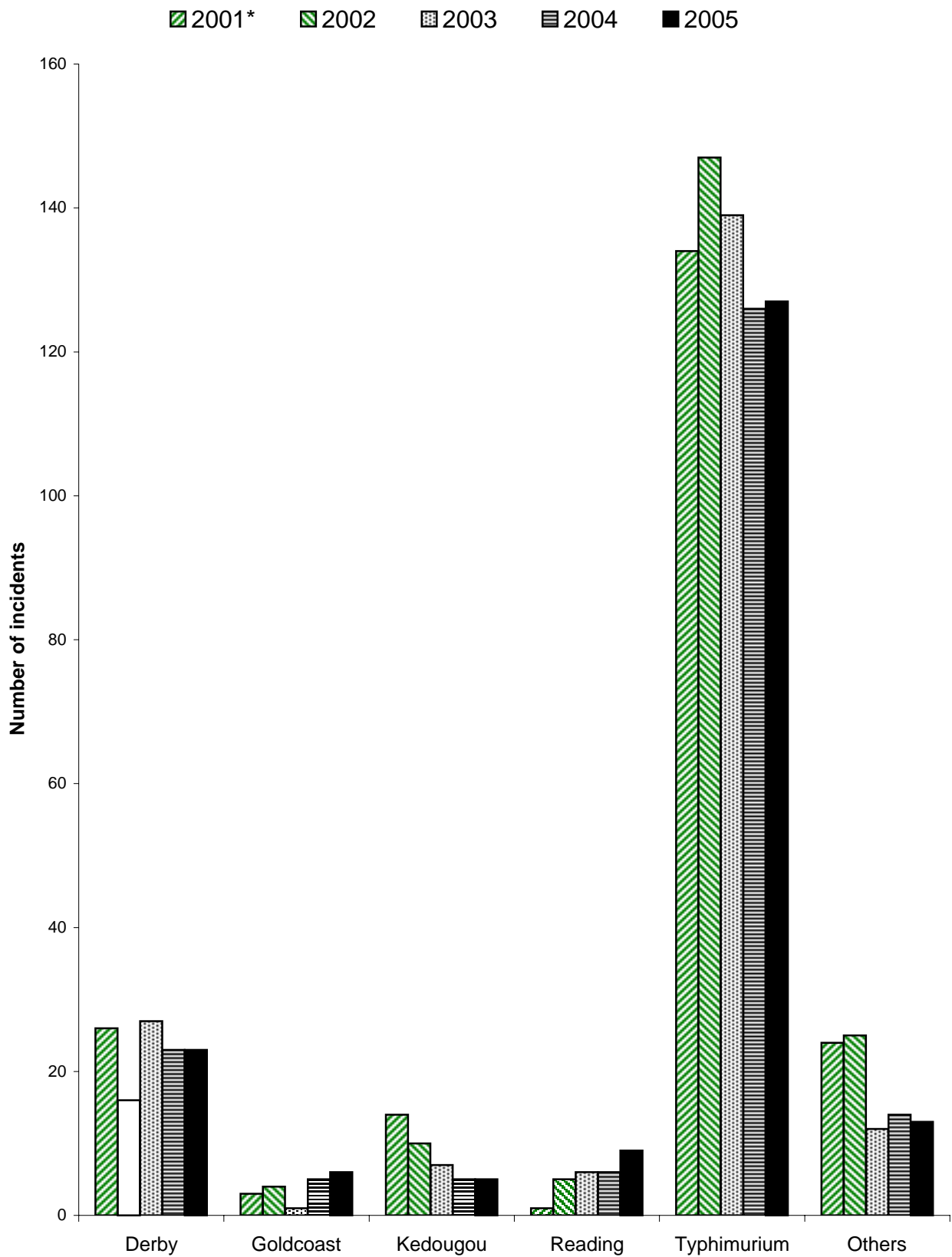
**Fig 23: Incidents of *Salmonella* serotypes in pigs in 2005**



**Table 31: Incidents of the top 5 *Salmonella* serotypes in pigs in 2005 as a % of all incidents compared to previous years**

Serotype	2001	2002	2003	2004	2005
S. Typhimurium %	66.3	71.0	73.4	70.4	69.4
S. Derby %	12.9	7.7	14.1	12.8	12.6
S. Reading %	0.5	2.4	3.1	3.4	4.9
S. Goldcoast %	1.5	1.9	0.5	2.8	3.3
S. Kedougou %	6.9	4.8	3.6	2.8	2.7
Total no. incidents	202	207	192	179	183

Fig 24: Incidents of *Salmonella* serotypes in pigs 2001 - 2005



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

**Table 32: S. Typhimurium in pigs on all premises**

Definitive Types Incidents (Isolations)	2001*	2002	2003	2004	2005
2	1 ( 1)	1 ( 1)	- ( -)	- ( -)	- ( -)
12	2 ( 2)	2 ( 2)	2 ( 2)	1 ( 1)	- ( -)
12a	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
40	- ( -)	- ( -)	- ( -)	1 ( 1)	- ( -)
41	- ( -)	- ( -)	- ( -)	- ( 1)	- ( -)
56	- ( -)	- ( -)	- ( -)	1 ( 1)	1 ( 1)
99	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
104	13 ( 15)	19 ( 22)	19 ( 20)	12 ( 12)	3 ( 4)
104a	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
104b	4 ( 4)	2 ( 2)	4 ( 4)	3 ( 3)	8 ( 9)
108	1 ( 1)	- ( -)	- ( -)	- ( -)	- ( -)
120	2 ( 2)	- ( -)	1 ( 1)	1 ( 1)	- ( -)
141	- ( -)	- ( -)	- ( -)	- ( -)	1 ( 1)
146	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
170	- ( -)	- ( -)	- ( 1)	- ( -)	- ( -)
193	17 ( 19)	20 ( 23)	24 ( 27)	24 ( 24)	29 ( 29)
193a	- ( -)	3 ( 3)	2 ( 2)	1 ( 1)	4 ( 4)
195	- ( -)	- ( -)	1 ( 1)	- ( -)	2 ( 2)
203	- ( -)	- ( -)	- ( 1)	- ( -)	1 ( 3)
206	1 ( 1)	- ( -)	- ( -)	- ( -)	- ( -)
208	14 ( 15)	9 ( 9)	5 ( 6)	2 ( 4)	- ( -)
U288	- ( -)	8 ( 9)	50 ( 52)	64 ( 64)	52 ( 52)
U302	16 ( 17)	13 ( 13)	16 ( 16)	3 ( 3)	9 ( 9)
U308	10 ( 13)	8 ( 8)	2 ( 2)	2 ( 2)	2 ( 2)
U308a	17 ( 21)	16 ( 17)	- ( -)	- ( -)	- ( -)
U309	- ( -)	- ( -)	- ( -)	- ( -)	1 ( 1)
U310	11 ( 13)	7 ( 7)	1 ( 1)	- ( 2)	4 ( 5)
U314	- ( -)	- ( -)	- ( -)	1 ( 1)	- ( -)
U315	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
untypeable	- ( -)	- ( -)	- ( 2)	- ( -)	- ( -)
RDNC	5 ( 5)	5 ( 5)	- ( 5)	- ( 4)	- ( 2)
NOPT	- ( -)	1 ( 1)	- ( -)	- ( -)	- ( -)
UNTY	19 ( 22)	13 ( 13)	7 ( 8)	10 ( 10)	10 ( 10)
untyped	1 ( 1)	20 ( 21)	- ( 1)	- ( -)	- ( -)
<b>TOTAL</b>	<b>134 ( 152)</b>	<b>147 ( 156)</b>	<b>139 ( 157)</b>	<b>126 ( 135)</b>	<b>127 ( 134)</b>

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

**Table 33: S. Enteritidis in pigs on all premises**

Phage Types Incidents (Isolations)	2001*	2002	2003	2004	2005
4	1 ( 1)	- ( -)	1 ( 1)	- ( -)	- ( -)
8	1 ( 1)	1 ( 1)	- ( -)	- ( -)	- ( -)
35	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
TOTAL	2 ( 2)	1 ( 1)	2 ( 2)	- ( -)	- ( -)

**Table 34: S. Hadar in pigs on all premises**

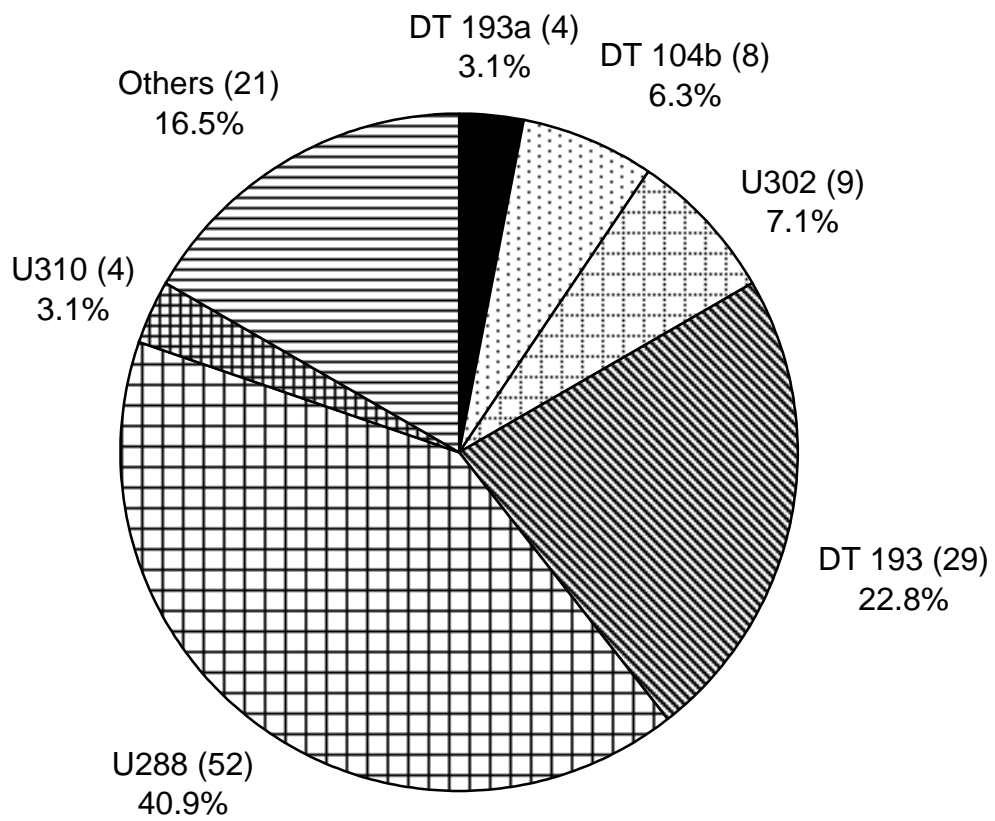
Phage Types Incidents (Isolations)	2001*	2002	2003	2004	2005
4	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)
TOTAL	- ( -)	- ( -)	1 ( 1)	- ( -)	- ( -)

**Table 35: S. Virchow in pigs on all premises**

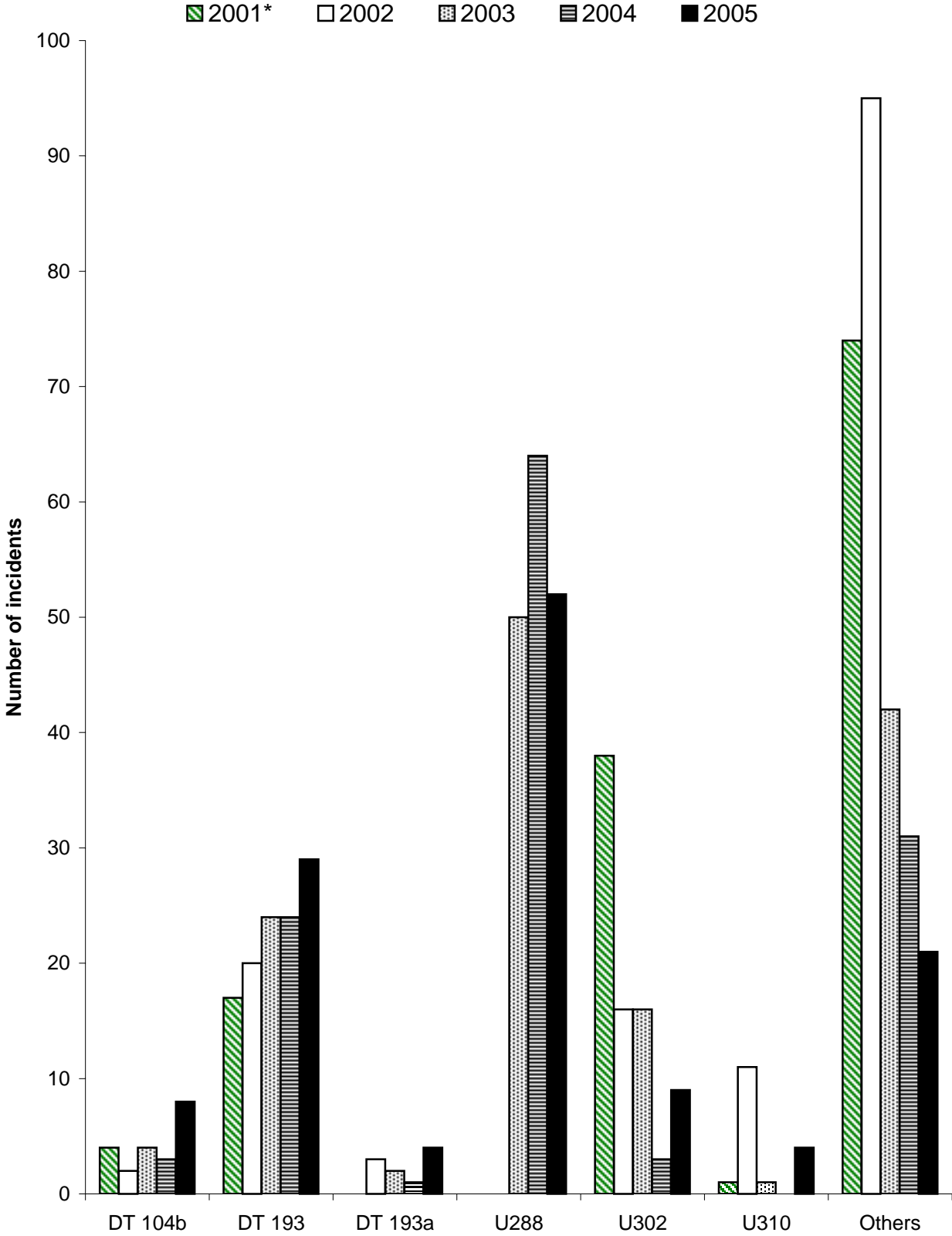
Phage Types Incidents (Isolations)	2001*	2002	2003	2004	2005
26	1 ( 1)	- ( -)	- ( -)	- ( -)	- ( -)
TOTAL	1 ( 1)	- ( -)	- ( -)	- ( -)	- ( -)

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

**Fig 25: Incidents of *Salmonella* Typhimurium definitive types in pigs in 2005**



**Fig 26: Incidents of *Salmonella* Typhimurium definitive types in pigs (2001 - 2005)**



\* 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 - 2005)**

