

Observations on the distribution of monophasic *Salmonella* Typhimurium on pig farms in Great Britain

Rob Davies, André Rabie, Mark Breslin, Francesca Martelli and Doris Mueller-Doblies

Department of Bacteriology, Animal Health and Veterinary Laboratories Agency – Weybridge, New Haw, Addlestone, Surrey, KT15 3NB, UK

Data derived from Defra-funded surveillance and research projects

Agenda

Background to monophasic *Salmonella* Typhimurium

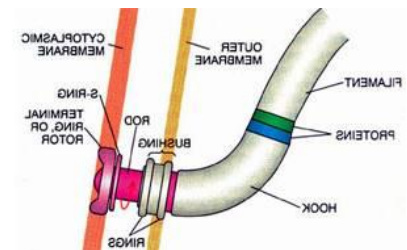
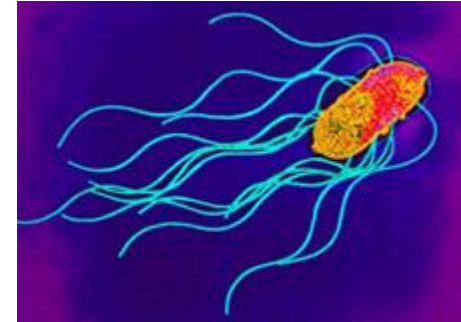
Field research studies

Conclusions

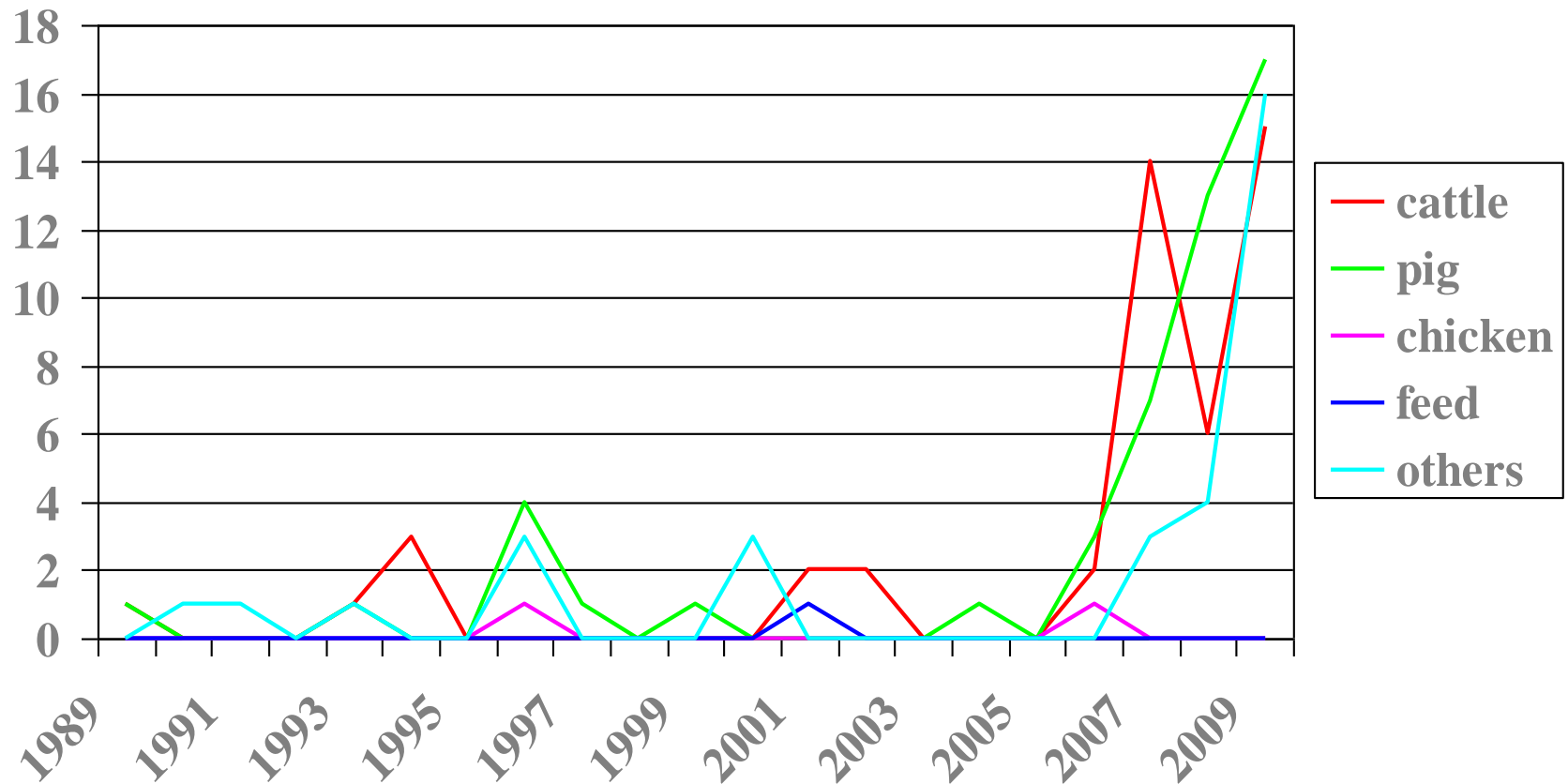


Nomenclature

- Classic *S. Typhimurium*:
- 1,4,[5],12:i:1,2
- *S. Typhimurium*-like strains
- 1,4,[5],12:-:1,2 : lacking the first phase H-antigen
- 1,4,[**5**],12:i:- : **lacking the second phase H-antigens**
- 1,4,[5],12:-:- : lacking both phases of the H-antigens

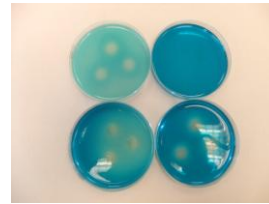


S. 4,5,12:i:- incident trends in GB



Methodology

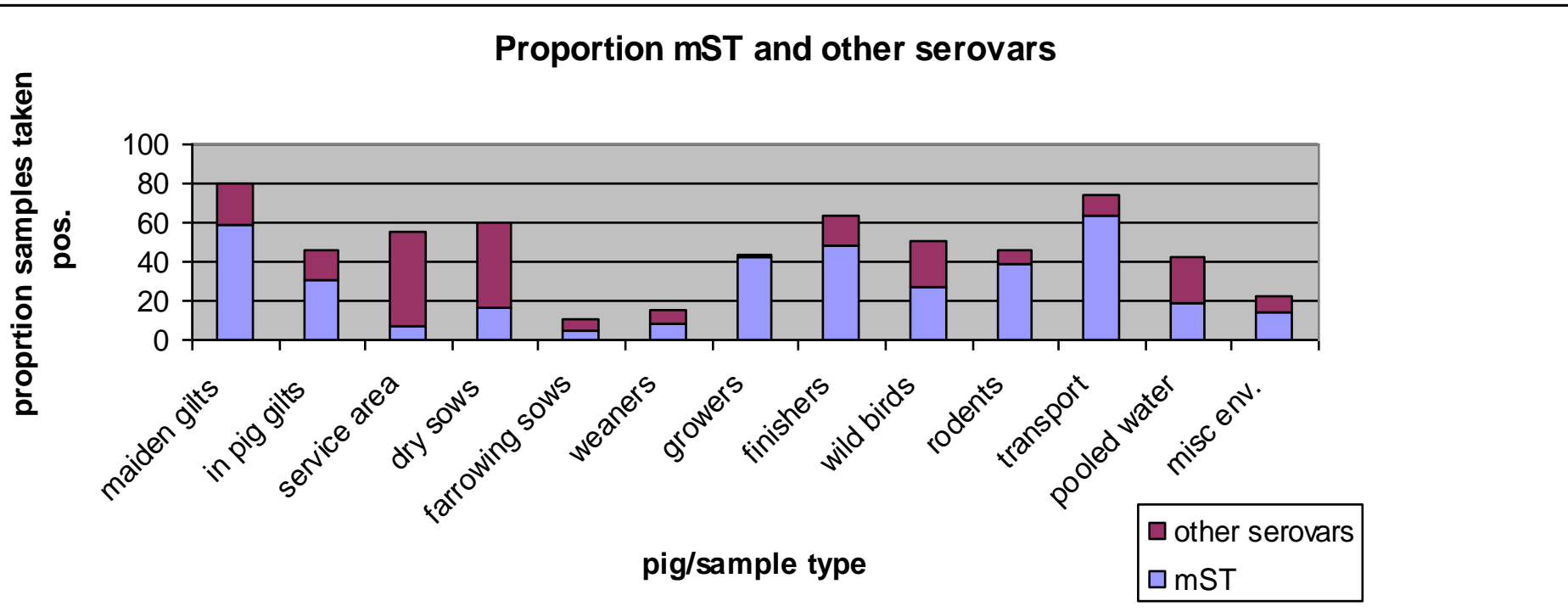
- Herds recruited after recent surveillance report
- Intended longitudinal study – pig and cattle herds
- Intensive sampling – up to 300 pooled fabric swab samples and up to 360 individual faeces (60 per epidemiological group)
- ISO 6579 (Annex D) modification (BPW;MSRV;Rambach agar)
- Dilution-enrichment semi-quantification
- Serotyping, AMR testing, phage-typing (to confirm as ST-related, plus some PCR testing)







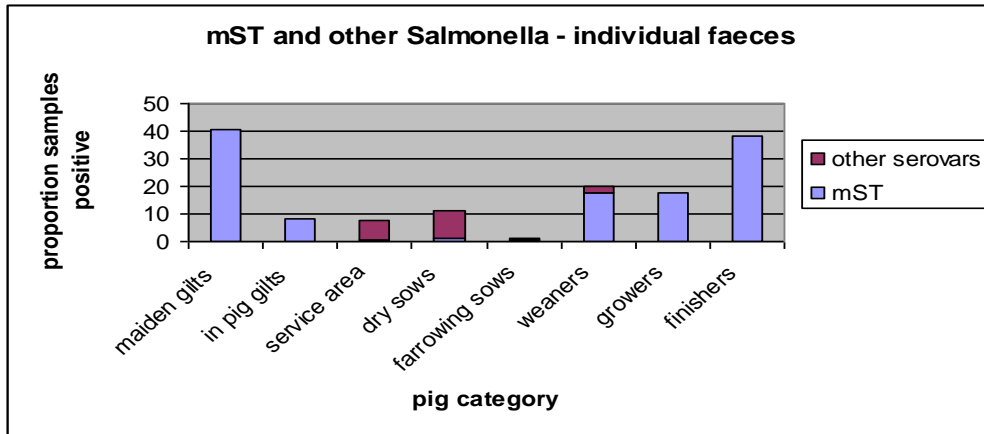
mST and other *Salmonella* serovars in six pig breeding herds - pooled faeces and environmental samples



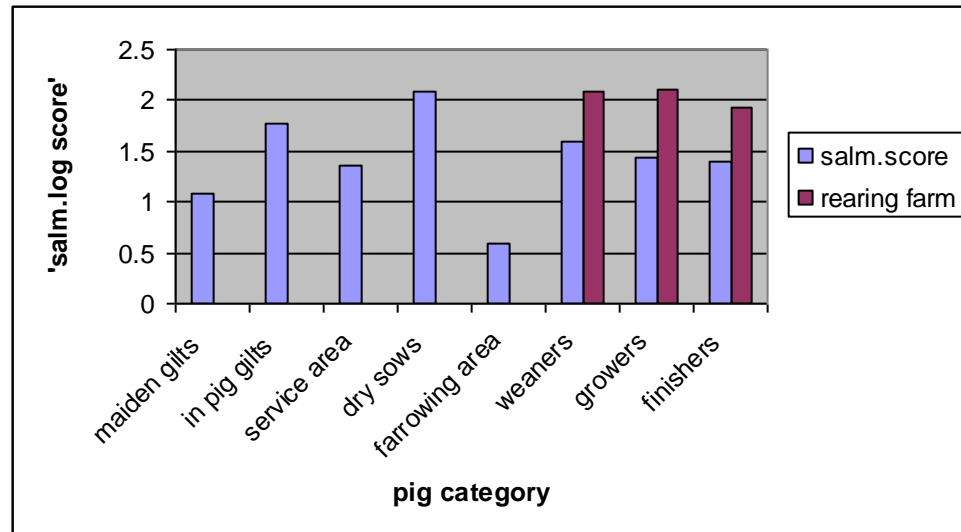
Serovars: S.Typhimurium; S.Derby; S.London; S.Virchow; S.Reading; S.Bovismorbificans



mST and other *Salmonella* serovars in six pig breeding herds - individual faeces samples



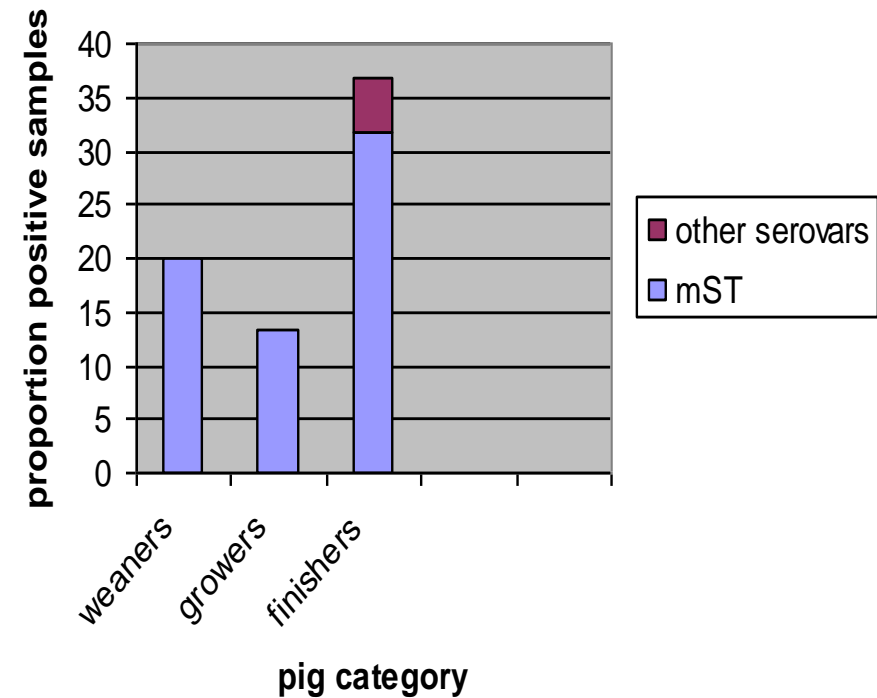
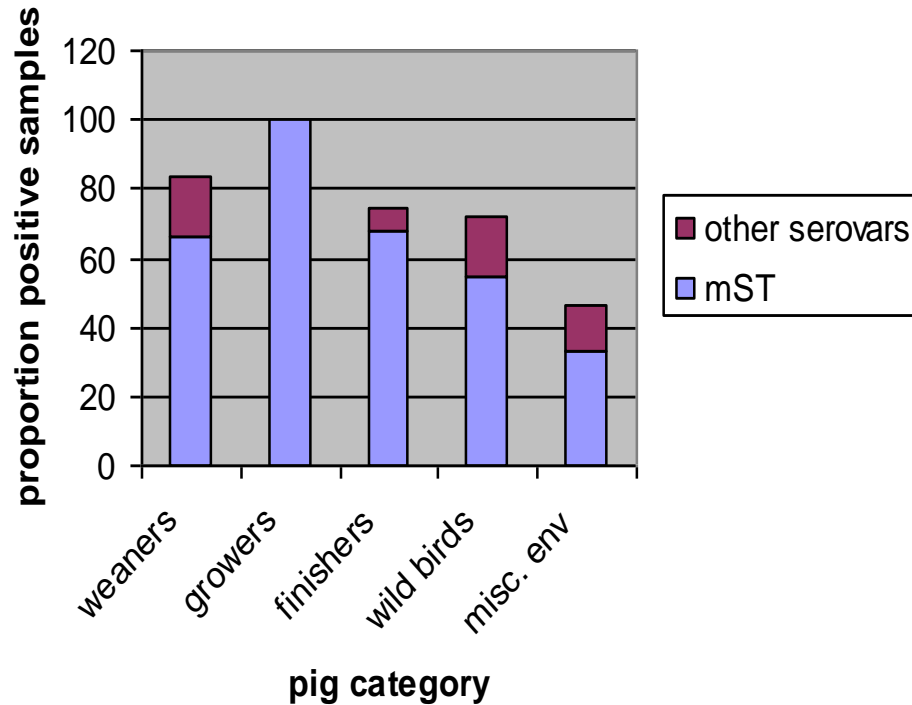
Salmonella mean c.f.u. scores in breeding and rearing herds:





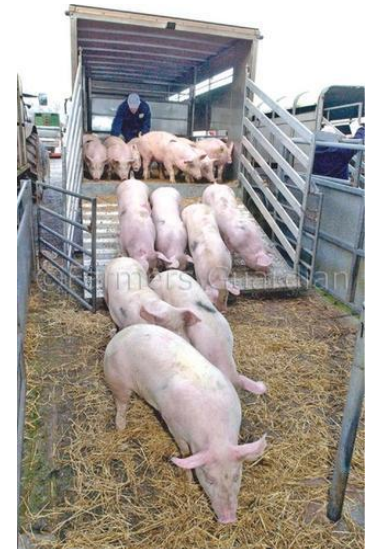
Rearing/Fattening Herds (4): pooled faeces / environmental samples

Rearing/Fattening Herds: individual faeces



***Salmonella* in pigs delivered to a newly established breeding unit**

- Nine samples of pooled faeces were collected from a single delivery of 100 four week old gilts
- *Salmonella* was isolated from eight of the nine faeces:
- S.4,5,12:i:- DT193 in four samples
- S.Typhimurium (not-phage typable) - 1
- S.Infantis – 1
- S.Derby - 1
- S.Anatum - 1



Conclusions

- There are many variants of 'untypable' ST
- Monophasic *Salmonella* Typhimurium originating from pigs is a significant public health issue across whole EU
- Farm studies suggest its behaviour is similar to ST DT104
- Certain strains appear to be very virulent in cattle, and cause disease in weaned pigs
- Sub-clinical infection also widespread, especially in growers and finishers
- Prevalence varies widely – cfu/g mainly low – but occasional high numbers
- Meal/barley feeding, moving paddocks etc. seems to be helpful
- Why have such strains emerged simultaneously worldwide?
- Will they rise and fall like regular Typhimurium?
- How effective is ST vaccination?

