

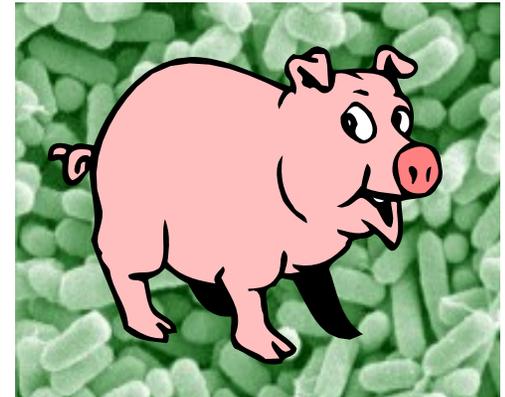


UK Experience with on-farm interventions to control *Salmonella* in finisher pigs

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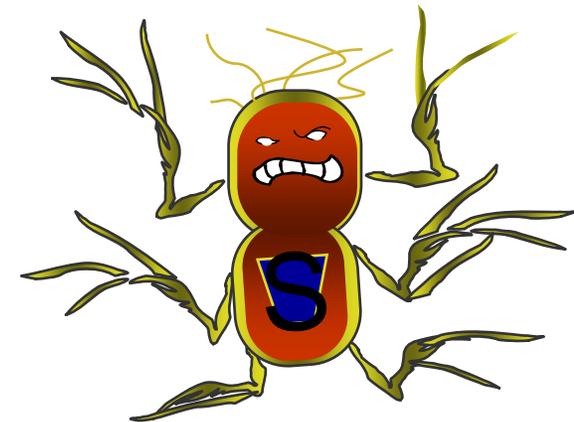
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SANCO Workshop on Salmonella Control in Pigs
Brussels 26 February 2009



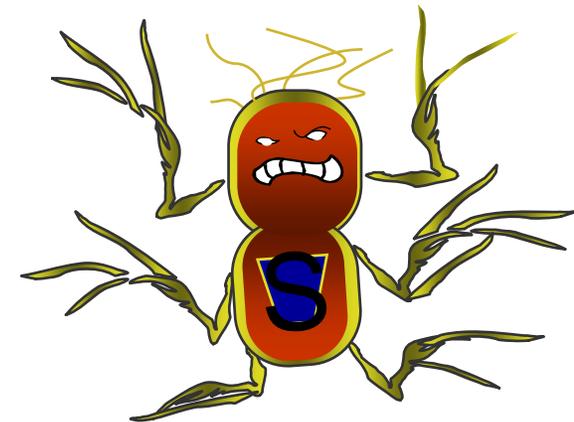
Outline

- Background
- Challenge in *Salmonella* control
- Principals of intervention
- Experience with interventions
- Motivation for change
- Conclusions



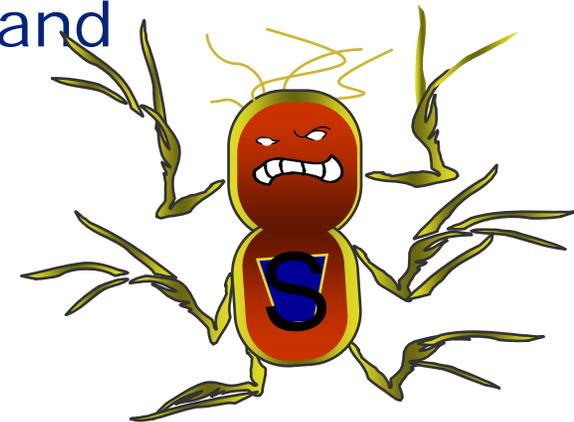
Background

- Industry recognised *Salmonella* was a potential problem in 1999-2000
- Instituted “ZAP” programme in 2001 to monitor farms via MJ ELISA as part of Quality Assurance
- Despite individual farms responding to poor “ZAP” scores & regaining acceptable status, no reduction in national prevalence



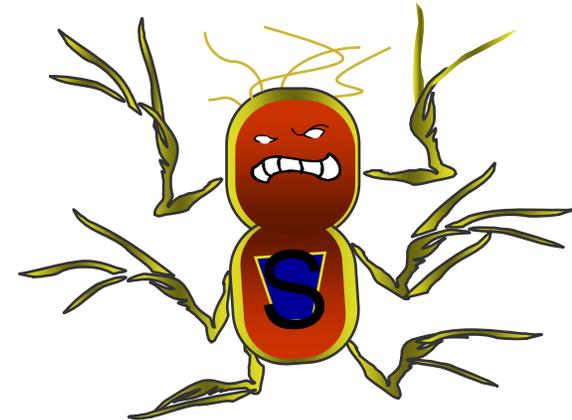
Facing the challenge!

- Salmonella is adapted to live in the gut
- It also survives well in the environment
- It has a wide host range
- Infected animals may not be diseased
- Infected animals may become carriers
- Salmonella is readily spread within and between farms



Principals of control

- Keep salmonella out
- Minimise risk of salmonella surviving in the environment
- Minimise risk of salmonella transmission in the herd



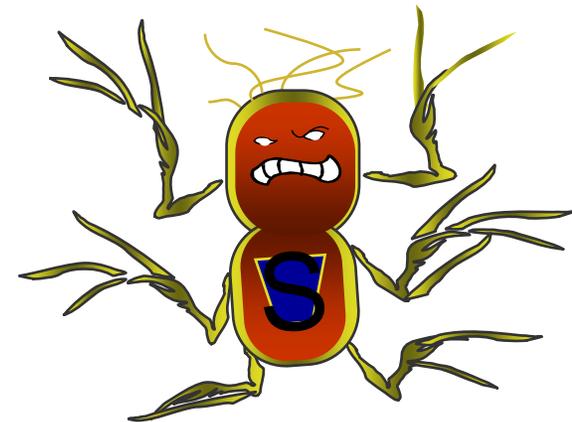
Interventions

■ Aims

- To reduce risk of *Salmonella* entering farm
- To reduce the risk of *Salmonella* contamination of environment between batches of pigs
- To reduce risk of transmission within batches of pigs
- To reduce risk of exposed pigs becoming infected

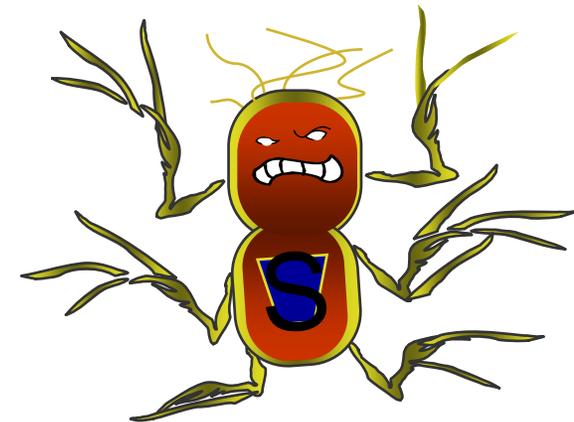
■ Approaches

- Enhanced hygiene & biosecurity
- Organic acid in feed
- Vaccination



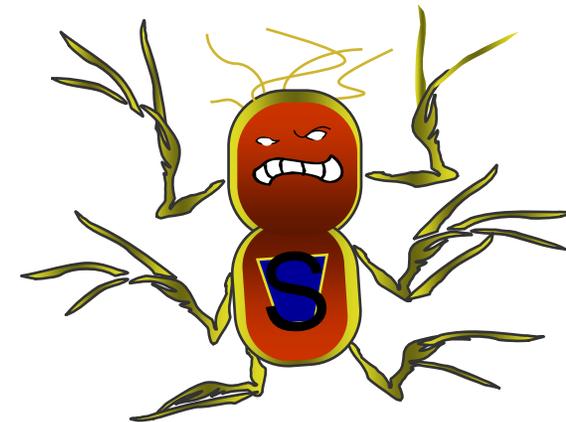
Where does salmonella come from?

- Salmonella might be brought into farms by:
 - Farm staff – on clothing, shoes etc
 - Dogs, cats or other domestic animals
 - Vehicles eg under wheel arches
 - Visitors eg on shoes or clothing
 - Wild birds eg gulls
 - Feed or water
- BUT



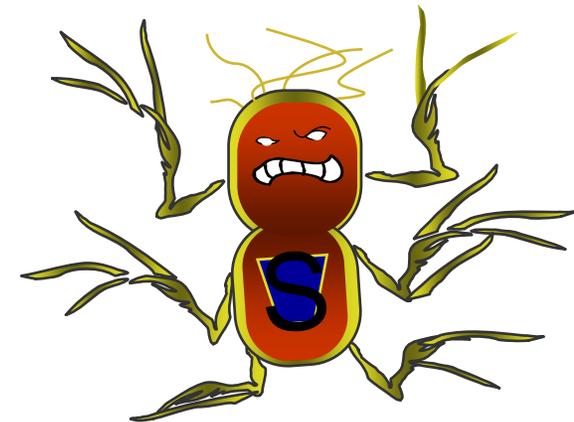
The main culprits!

Risk of infection is ~4 times higher if salmonella is introduced with pigs



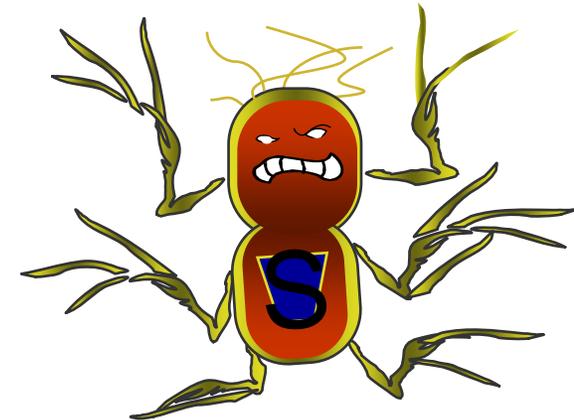
Biosecurity & hygiene

- Tested on 2 groups of batch finisher farms in RCT
- Measures included:
 - Strict all-in/ all-out policy
 - Introduce pigs from a single source
 - Rodent control
 - Reduced movements of people & vehicles
 - Increased cleaning & disinfection
 - Increased days empty between batches
 - No moving pigs back from sick pens
 - Provision & use of boot dips & brushes



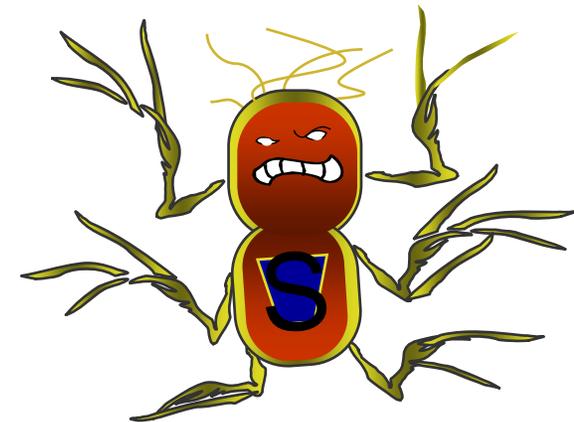
Results from Biosecurity & Hygiene interventions on batch finisher farms

- Farms with better biosecurity & hygiene had lower *Salmonella* incidence
- Effective rodent control reduced risk of *Salmonella* by ~25%
- Effective cleaning & disinfection between batches reduced risk by ~50%
- **BUT** ~60% of cleaned pens *Salmonella* positive before re-stocking
- Can be successful: 4 of 44 farms had 0/30 positive salmonella cultures and 0/40 positive MJ ELISA tests
- BUT introduction of infection with weaners could overwhelm benefits
- So, overall reductions modest (eg up to 1/3rd reduction)
- Compliance, esp with biosecurity, difficult
- Unpredictable response amongst farms



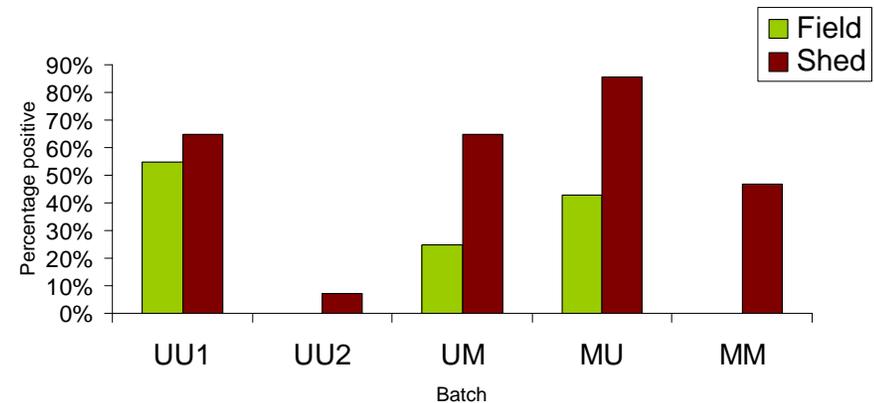
Hygiene failures

- Some observed reasons:
 - Salmonella isolated from staff changing rooms inc tables used at lunch time
 - Foot dips changed less than once/fortnight
 - Clothing (farm boots/overalls) worn off site
 - Clothing washed less than once/ fortnight
 - Some visitors didn't wear protective clothing or observe "pig free" rules
 - Equipment cleaned infrequently if at all



Organic acids in feed

- Repeated trials within several individual farms, with **control** groups
- Intervention often begun when prevalence was high
- At end of intervention, prevalence was reduced on some farms – in treated & **untreated** groups
- Where no response was seen, may have been that challenge was overwhelming



Group 1

Group 2

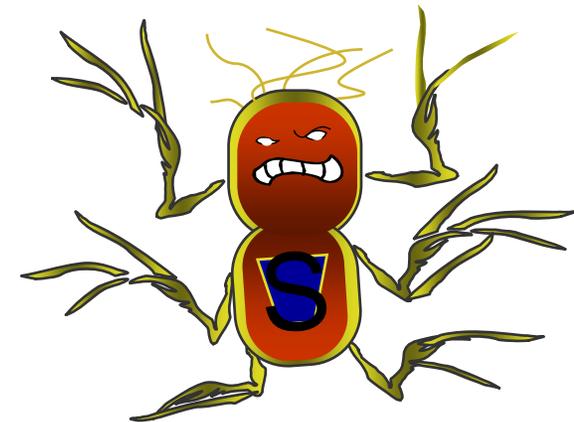
UU1 – start

UU2 – end; untreated

UM/ MU/ MM – end; treated

Vaccination

- Use of oral vaccine via drinking water at re-stocking in a group of specialist finishers – NO effect
- Some success reported in breeder-finisher farms where vaccine used in combination with improved hygiene & biosecurity
- Other intervention trials on-going at present

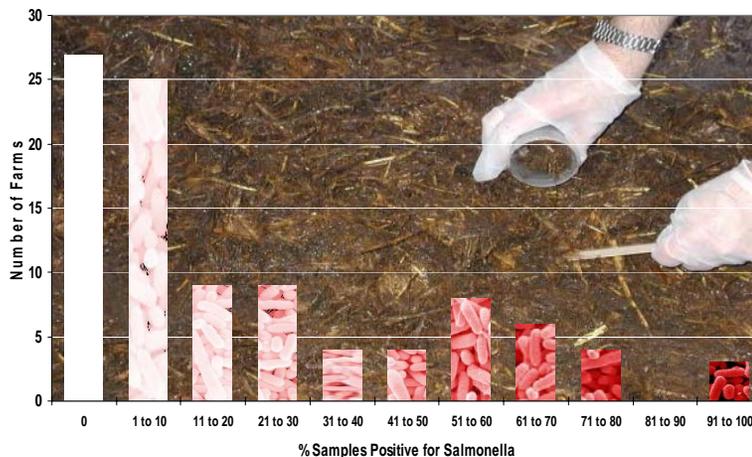


Bespoke farm interventions

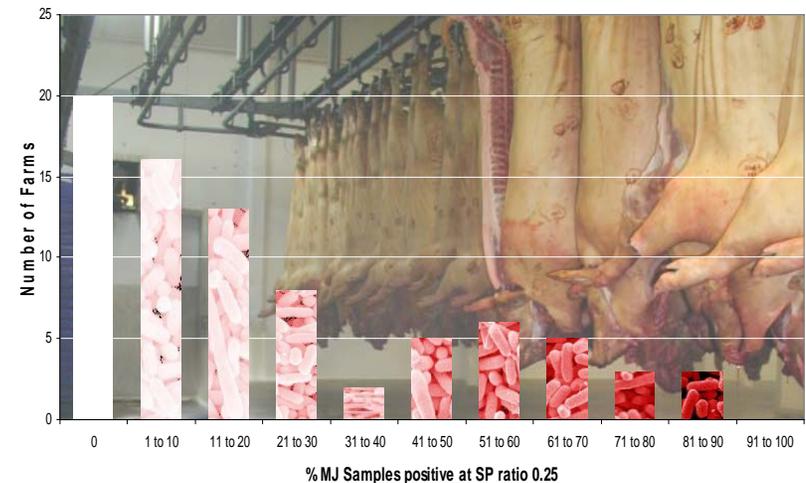
- “ZAP” 2 or 3 farms offered free intensive visit by VIO
- Intensive sampling on farm to identify “hotspots”
- Detailed discussion with farmers & vets
- Detailed action plan created
- Common issues:
 - Widespread environmental contamination
 - Poor hygiene
 - Rodents infected
 - Sick pens infected
- Reportedly successful based on feedback & ZAP score – but follow-up difficult & expensive; ZAP unreliable at farm level
- Case study ZAP2/3 farms reduced their prevalence to below 25%

Frequency of *Salmonella* in a survey of finisher pig farms in GB

Pooled Pen Faeces Culture Results



Meat Juice ELISA Results

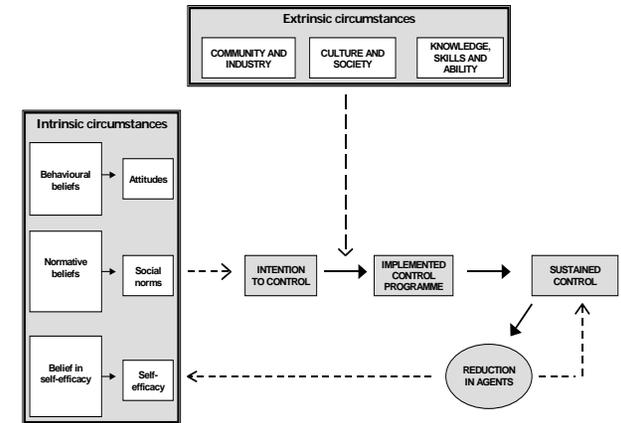


Many farms have a lower prevalence

- All farms can aspire to improve
- BUT most *Salmonella* positive pigs live on low prevalence farms
- So ALL farms would have to intervene to produce public health benefits

Motivation

- Achieving national targets demands change by many
- Intent -> Implement -> sustain control measures
- Rate of change impacted by societal factors eg:
 - Acceptance of individual responsibility
 - Belief that change is possible
 - Recognition that industry is acting together
 - Ability to see results
 - Feedback & reward
 - *Etc*



- In UK, farmers accept some responsibility in principal
- Are not persuaded they must change
- Do not believe proven interventions exist
- Do believe they will bear costs but not gain benefits
- Believe that **abattoirs** should also be involved
- Value advice from their private veterinary consultants above all else

Challenge is not only to design effective interventions but to engage everyone in change

Conclusions

- *Salmonella* control on farm is possible but challenging
- Some farm conditions increase risk:
 - Outdoor production
 - Solid floors
 - Specialist finishers
- Low profit margins & decline in industry has led to deterioration in buildings etc



The studies reported here were funded by Defra & FSA and supported by BPEX

I am grateful to my colleagues at VLA for all their hard work and especially to the many farmers who agreed to co-operate with us

Thank you!

