

High costs for disinfectants don't always mean that they are the best. However, it is interesting to note that in the DEFRA disinfectant comparison paper of 2011 the more expensive products routinely performed better than less expensive products.

So, returning to the comments of the integration's owner, his statement that the cost of disinfectant was not important, was absolutely true when compared with improvements in the FCR, egg production or bird mortality rates. It's also noteworthy that the results after the use of the new disinfectant were so marked that he noticed them from the flock records!

So, it is well worth remembering that the most expensive product is actually the one that doesn't do the job for which it was intended!



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SALMONELLA; IS MASH FEED PART OF THE PROBLEM?

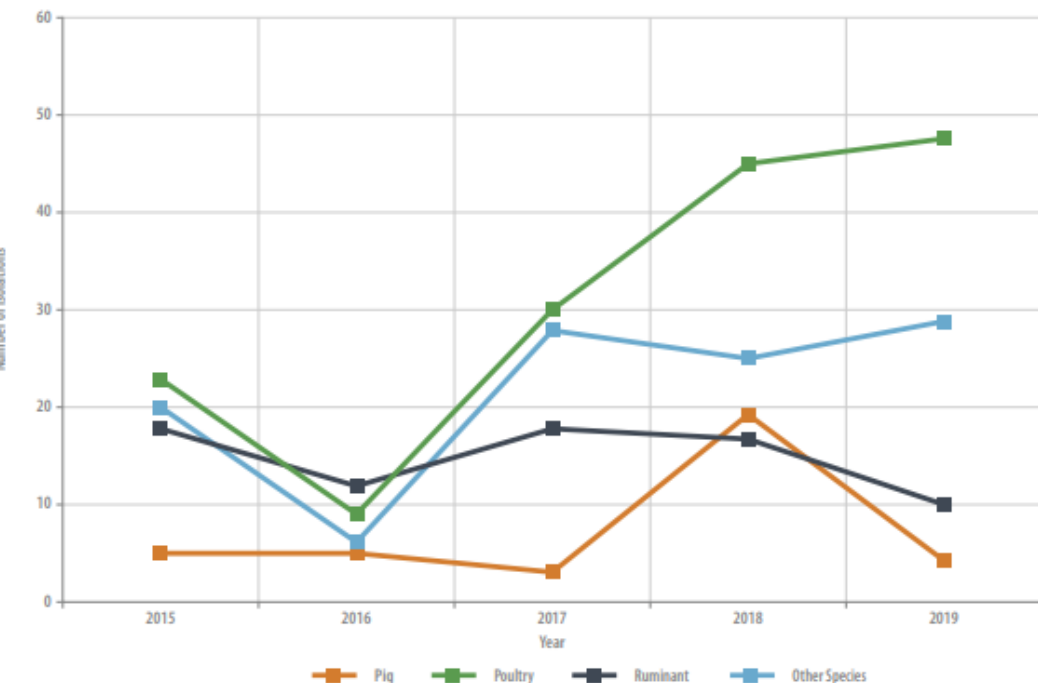
UK eggs have a great reputation; a good safety record and positive press in recent years has helped increase consumption.

But we take nothing for granted... low Salmonella incidence will always be a direct result of focus on biosecurity, shared by producers, feed suppliers and others.

Most producers spend time and money ensuring water and environments are free of pathogens and other contaminants, but even

today, only the leading few actively treat feed. Given that feed – and especially mash feed – is a proven fomite for Salmonella that goes from a central point to every bird house in an operation, why take the risk? We asked feed pathogen control specialist and Anitox Technical Director Simon Carlton to shed some light on issues.

Figure 1
Source: Salmonella in Livestock Production in GB, APHA



More than 700 isolations of Salmonella were found in UK feedstuffs in 2019; 91 were from compound feeds and 622 from feed ingredients or other associated products. That's up nearly 15% on 2018 numbers, and just over one-and-a-half times the levels reported in 2017.

Of the 2019 haul, 88 were isolations of regulated Salmonella serovars, almost 40% up on 2018.

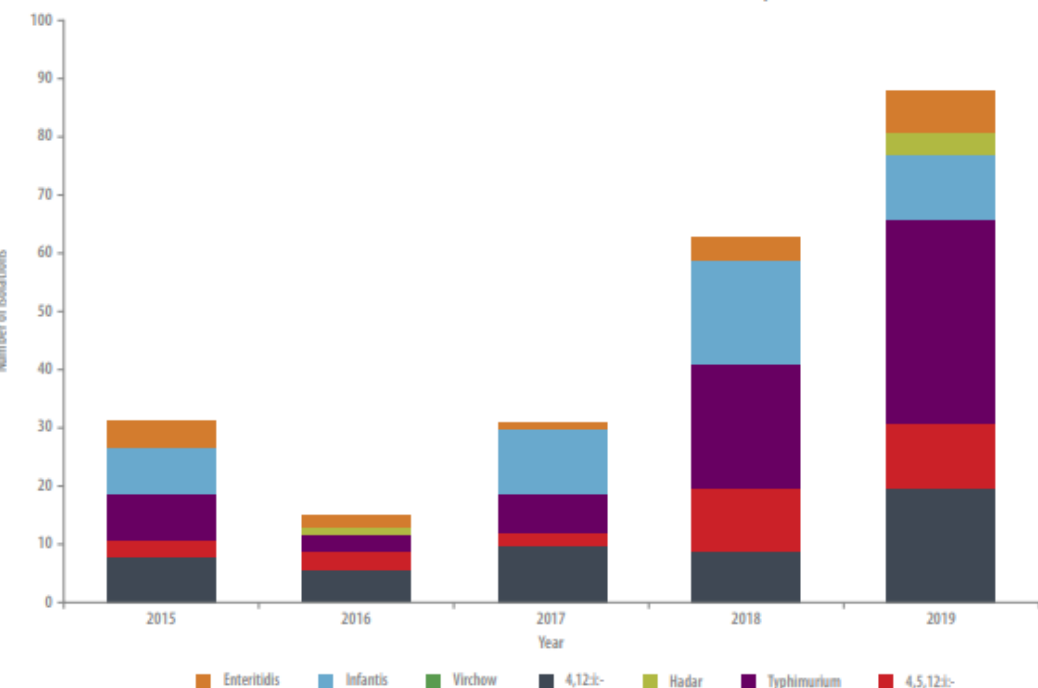
It's not an award the poultry sector would wish to win, but it's topped the rankings for salmonella numbers isolated from compound feeds since 2017 (see figure 1).

Dive into the data and we can see the change in regulated serotypes being recovered. Worryingly we see a 40% rise in incidents of regulated serovars over the past two years (see figure 2). The data's there to drill down further; All the Enteritidis, for example, was found in animal by products.

Given that the figures don't include the many results from private labs which commonly don't specify the nature or origin of samples, our Salmonella map is sadly an incomplete picture today. And we need to add to that the fact that Salmonella is incredibly hard to find in the first place.

As a colony-forming bacterium, it grows in tight-knit communities and is unevenly spread. It's rather like a lucky dip... hide a handful of smarties in a 27-tonne delivery of cereal, and try and scoop one out, blindfold, using a cup on a stick. You get just three or four attempts. Luck plays a large part. In real life the only way to stack the odds in your favour is to take many more samples, or to test where your chances of success are higher... in dust and spillages. When the Animal and Plant Health Agency undertakes Salmonella sampling at mill, its team will visit over one or two days and take between 300

Figure 2
Source: Salmonella in Livestock Production in GB, APHA



and 400 samples from multiple locations including outloading and lorry wash. Taking this number greatly increases the chances of finding Salmonella, but considerations of time and cost mean that it isn't commercially realistic.

Even if you get lucky with your sampling, you're not home and dry. Analysis techniques play a huge role in determining what you'll find. Pre-enrichment broths and agars work to create the perfect conditions for some serotypes, and suppressing others in the process, and practices such as selection of single colonies for onward culturing narrow the focus of investigation.

What does all this tell us? Well...

- UK poultry – and specifically the UK layer industry - has done a great job in reducing Salmonella over the years. Current levels of

all Salmonella serovars, including regulated ones, are well below the current 2% target.

- Sadly, we are seeing increases in the number of human Salmonella outbreaks.
- Salmonella isolates from chickens has risen by 51.6% since 2017
- Salmonella Enteritidis incidence in layers has risen dramatically, from just 3 flocks to 14 since 2018
- Levels of Salmonella in feed have also risen dramatically since 2018, up by 40%
- Finding Salmonella in feed is difficult; luck plays a bigger part than is desirable

What could be behind more cases in feed?

It's complex, but surely the correlation in timing between a ban of Formaldehyde, a reduction in effective feed sanitization and

the rise in salmonella isolations from poultry sources can't be ignored.

Mills have cut back on their use of effective feed sanitizers. The only product that offers high levels of control and residual protection at low application rates (Finio) requires a change in the way we address the economics of feed safety. As a result, many have turned to turn to cheaper, less effective feed acidifiers and organic acids, or worse still are doing nothing at all. The result: higher levels of pathogens in mills and in feed.

Without regular use of effective feed sanitisers, Salmonella can become resident in feed mills and farm feeding system, intermittently seeding Salmonella into feed as it passes on conveyors or is stored in silos. It's an increasing problem. Anitox receives upwards of 3000 feed and feed ingredient samples from the UK and Europe each year for analysis. Our feed microbial database shows rising rates of Salmonella, particularly vegetable proteins. It's a trend that looks set to continue, as Europe turns to raw material imports from markets where pathogen incidence rates are higher. The neonicotinoids ban, for example, is leading to a reduction in home grown oilseed meals and forcing buyers to look abroad for their ingredients.

It's by no means true that all fingers are pointing at feed. The trend towards extended periods of lay means protection from vaccination, which are already selective in terms of the number of serotypes covered, are likely to be waning towards the end of layer lifetimes.

Why does all this matter more in layers?

Simple... aside from chemical controls, heat offers the most effective control tool in keeping pathogens in feed down. While it's certainly true that normal pelleting temperatures offer some very limited

protection, as Aviagen and others make clear, true heat treatment used in the preparation of feed for genetics and parent stock needs 86°C for 6 minutes. But in the case of layer mash, we see the near-total absence of a heat step. Pathogens that arise during growing or processing of raw materials find their way through milling and directly in to finished feeds, unhindered. In fact, the conditions in mills, transport, silos and on-farm feeders can encourage microbial growth.

The case for making an intervention is clear. To manage your risk, choose an effective feed sanitiser that offers downstream protection against recontamination. In a post-formaldehyde-ban Europe, that means Finio. For those prepared to manage higher levels of risk, organic acids such as F4 – applied correctly – offer some protection. Your local Anitox representative can help you evaluate the specific risks in your operation; the set-up and age of mills and the formulation of rations all significantly impact the calculation.

Just one other observation as I wrap up: beware of taking those EU Salmonella figures on face value. While it's true that the total number of cases reported in the EU has been fairly stable, infections acquired within EU states increased by 23% between 2014 and 2018. Our ability to pinpoint the source of infections is set to change the way the industry and its influencers manage Salmonella biosecurity; analytics such as the latest CRISPR SecSero Salmonella Sequencing will help producers shine a light directly onto entry points in live production. The spotlight on feed is here to stay; the good news, however, is that our industry is more than capable of responding.