Salmonella controlled by hygiene and acidifying water on Suffolk pig unit

Pig producer Simon Watchorn has overcome a salmonella outbreak on his outdoor unit by acidifying water supplies and employing a robust hygiene protocol rather than relying on routine antibiotic use.

Mr Watchorn runs a 650-sow, breeding to finishing unit on his 400ha Park Farm, near Bungay, Suffolk and has worked closely with his vet to devise a health management plan.

With a stringent approach to hygiene and biosecurity the farm had a consistently low post-weaning mortality rate at 1.5%.

But in August 2014 mortality rose suddenly to 8% and live pigs showed reduced growth rates, diarrhoea and symptoms of septicaemia.

Post-mortem results identified Salmonella Typhimurium and sick pigs were treated with injectable antibiotic.

To control the disease in the wider herd, antibiotic (Apramycin, an aminoglycoside) was introduced to feed and water lines.

But Mr Watchorn and his vet wanted to avoid a long-term, routine antibiotic treatment strategy because of concerns that the Salmonella bug can rapidly develop resistance to the drugs.

“The cost of long-term, in-feed antibiotic use was also high,” Mr Watchorn says.

“The Apramycin was added to 7 tonnes of piglet and weaner feed per week. This was costing an extra £350 per over non-medicated feed, equating to an extra cost of £15,000 per year.

“Instead we decided to investigate the root cause of the Salmonella infection and to devise a plan to boost the pigs’ immune systems to help them fight infection in the future,” Mr Watchorn adds.
The plan was to review all aspects of the unit including water supply, pig movements, biosecurity and cleaning protocols.

After analysing the water supply the decision was taken introduce an acidification process to reduce the presence of harmful bacteria.

The acidity or pH of water is critical in reducing Salmonella levels, and is harmless to the pigs. The Salmonella bacteria do not generally survive in pH levels below 4.2, so they keep the pH at 3.9 explains Mr Watchorn.

A water-powered dosing pump was used to draw acid directly from containers of the bought-in supply at a dilution rate of 0.1% (1ml per 1000ml). After research the vet chose a propionic, formic and lactic acid blend which was effective against salmonella strains.

“At a cost of 7p per pig (over the first 10 weeks after weaning) the acid treatment was far cheaper than the in-feed and water-based antibiotics – plus it’s in line with responsible antibiotic use,” Mr Watchorn says.

The unit uses 4 m³ of acid per year at a cost of £1,400 per m³.

“The total cost of acidifying the water is about £5,600 a year, roughly saving us £10,000 a year when you compare it with the antibiotic treatment cost,” Mr Watchorn says.

But the system needs careful monitoring.

“Maintaining the pH at 3.9 – or at least below 4.2 – is absolutely critical. We measure levels weekly and have an accurate waterproof pH meter to do this,” he says.

The farm has now withdrawn all in-water and in-feed antibiotics with mortality successfully returned to the 1.5% rate achieved before the outbreak. Simon describes the Park Farm Hygiene Protocol as:

- Weaner site moved to ground which had not been used for two years.
- Stocking rates reduced with additional weaner arks and pens for each batch.
- All overalls washed every day