

Checklist for the prevention and control of an infestation



WHAT TO DO AGAINST SALMONELLA IN THE PIGSTY?

Salmonella contamination in the herd is a vexing issue for pig farmers. If an infestation goes unnoticed, it can quickly spread throughout the farm. In addition to a possible reduction in the animal welfare of sows, fattening pigs and piglets, a salmonella infestation often means a financial burden. At the same time, combating it involves a great deal of administrative and organisational effort. However, this does not have to be the case. In addition to management measures, farmers can contribute to keeping salmonella pressure in the pig herd low by providing suitable feed.

Veterinary measures aim to minimise the risk of infection with salmonella. The greater the salmonella load in the intestines of pigs, the greater the risk that germs will be transmitted to humans via the meat. The detection of salmonella contamination can also make it difficult to market the animals. Large slaughterhouses sometimes deduct up to three cents per kg carcass weight from the payout price if the farm is classified in the highest risk group.

Even though the average salmonella load has been declining for years and the monetary loss can be reduced by following a well-defined action plan, infections are an avoidable nuisance. If an infestation remains unnoticed, it can cause salmonellosis in the herd. This is especially true for fattening pig farms, but can also be important for piglet and sow farmers.

What are salmonellae?

Salmonella are rod-shaped, gram-negative bacteria of the genus *Salmonella* and can cause infections of the gastrointestinal tract. *Salmonella Choleraesuis* and *Salmonella Typhisu*s are particularly relevant for diseases in pigs. An infection usually becomes noticeable within 12 to 72 hours. The salmonelloses they cause are zoonoses - i.e. diseases transmissible from animals to humans.



Gram-negative bacteria of the genus *Salmonella* under the scanning electron microscope (coloured).

How to recognise an infestation with salmonellae

The indicator of a salmonella infestation is the detection of corresponding antibodies. Veterinarians usually take blood samples from the pigs or samples from meat juice extracted from muscle tissue. Regular and systematic recording within the framework of quarterly salmonella monitoring is mandatory for all QS-certified farms in Germany. QS monitoring divides farms - depending on the infestation rate - into three risk categories:

- Category I (low risk): <20 % of the animals have antibodies
- Category II (medium risk): 21-40 % of the animals have antibodies
- Category III (high risk): >40 % of the animals have antibodies

If a farm falls into the latter category, it is obliged to inform the competent veterinary office within two weeks and to initiate measures to reduce the salmonella pressure. For this purpose, bacteriological and epidemiological investigations must be carried out to identify the source of entry. In the case of classification in category II, appropriate measures are recommended, but not obligatory.

Salmonella on the farm: here's how you should proceed

For a sustainable reduction of salmonella pressure, it is indispensable to create an awareness of the problem among all those involved. Only on the basis of this understanding can countermeasures be implemented consistently. Measures to prevent an introduction into the farm and to combat an existing infestation can be summarised in the following three categories.

1. Avoiding salmonella entry

Salmonella usually enters the farm via purchased and infected animals. In case of suspicion, you should

test the pigs for salmonella infection at the time of delivery - before they are brought in or immediately afterwards. The integration phase for gilts in the quarantine house must be observed in any case. Rodents, dogs or cats that enter the farm are often the cause of salmonella infections. Farmers should also critically question the movement of people in the barn. In case of doubt, it makes sense to reduce unnecessary visits to a minimum and to pay close attention to wearing the farm's own overalls and boots. Ideally, you should also provide headgear and disposable gloves.

2. Suppressing the spread of salmonellae

Once salmonella has entered the farm, infection can spread rapidly. In this case, farmers should act on several fronts at the same time:

Regular cleaning & disinfection

Control and prevention of salmonella infestation. Regular cleaning and disinfection of the stalls are important steps. Thorough cleaning after each fattening round or each re-housing of sows should be a matter of course. After thorough soaking (at least 12 hours, e.g. using a soaking system), you should clean all compartments thoroughly with a high-pressure cleaner. In doing so, you should rinse out all troughs and the inside of the feeders.

You should also regularly clean and disinfect all other areas and objects with which the pigs could come into contact. This includes drive boards or drive paddles as well as aisles, ramps and animal scales. To avoid spreading an infestation through contaminated utensils in the herd, ideally use different coloured materials for different areas of the barn. When choosing a disinfectant, make sure it has a suitable spectrum of activity and a suitable room temperature in order to avoid cold errors of the disinfectant. If in doubt, seek advice when buying from a country store.

Clean slurry channels and hygiene sluices

Slurry channels and hygiene sluices are often overlooked as reservoirs for salmonella. Even if cleaning is difficult due to high frequency use and poor accessibility, you should consider cleaning and disinfection, especially if an existing salmonella infestation proves to be persistent.

Improve stable climate

The environment in which the animals are kept also deserves attention in the fight against salmonella. Particularly the climate in the stables and the associated ventilation are relevant here. Unhygienic exhaust air systems can form a reservoir for salmonellae and spread them on the farm. Therefore, regular cleaning is particularly important here. An optimal barn climate contributes to the animals' well-being and reduces the pigs' stress, which can promote infection.

Combat rodents

Consistent control of harmful rodents is mandatory. Mice and rats that move freely between compartments can favour an uncontrolled spread of pathogens. If the invasion cannot be avoided, you should use subacute-chronic poison baits for control. Here, care should be taken to change the active ingredients regularly in order to prevent resistance. On QS farms, several baits are usually placed inside and outside the buildings.

Combat fly infestation

The same applies to flies, which also act as vectors for salmonella and are often underestimated. Fly traps are available in almost every country store or DIY store.

Vaccination

Vaccination against *Salmonella typhimurium* can also be a viable - albeit costly - way of getting the salmonella problem under control. Immunisation can prevent or at least counteract the excretion of salmonella and thus contamination of the stable environment. Clinical symptoms often decrease demonstrably as a result.

3. Strengthening the resistance and immune system of pigs

The immune system of pigs can be strengthened with the help of various measures. Proper feeding and the health of the animals' stomachs and intestines are particularly important.

Offer special food

The most important factor in improving resistance to salmonella infection is feeding. Suitable concepts have a special acidity. Organic acids (e.g. formic and lactic acid) lower the pH value in the pig stomach, which counteracts infection with gram-negative bacteria that prefer a neutral to slightly alkaline range. A stomach pH of two and four is ideal for this. A low pH also promotes the activity of enzymes that improve protein digestion. Appropriate feed concepts (e.g. the ACID and AMS concept) ensure in this way that less undigested protein reaches the large intestine, where it is no longer available as food for harmful germs. While formic/lactic acid lowers the pH value in the stomach, benzoic acid works in the small and large intestine. By regularly changing the acid supplement, beneficial effects can be combined.

Flour feed against salmonella

Different feed structures can have different effects on salmonella. For example, feed in flour form has an inhibitory effect. The reason for this is that its structure tends to be coarser. This increases the time the feed remains in the stomach, which optimises acidification and lowers the pH value of the feed slurry. At the same time, more undigested food components reach the large intestine. The starch-rich components, here converted by the microflora into the short-chain fatty acids propionic and butyric acid, strengthen the intestinal wall as a barrier against the penetration of exogenous germs such as salmonellae. Accordingly, if salmonella pressure is

high, it should be considered - if technically possible - to switch to meal feed.

Suitable raw fibre

The fermentation of indigestible fibre components of the feed takes place in the hindgut sections. This produces short-chain fatty acids (e.g. propionate or butyrate), which regulate the pH value in the large intestine. This has a growth-inhibiting effect on salmonellae and nourishes the intestinal flora of piglets, sows and fattening pigs.

Reduce stress

Stress can favour a salmonella infection. This can be triggered, for example, by an abrupt change in feed, where feed is fed that is insufficiently coordinated.

Minimise yeast and mould contamination

It is important to avoid unnecessary stress on the pigs' immune system. To relieve sows, piglets and fattening pigs, yeast deposits or mould should be avoided wherever possible. Regular, systematic cleaning is necessary for this - especially in liquid feeding systems. This includes, among other things, cleaning the mixing tank with acids and alkalis and consistent flushing of feed lines. The same applies when using by-products or your own grain. Check storage regularly and empty or clean appropriate feed silos. In dry feeding systems, volumetric feeders and downpipes are among the critical areas that require regular inspection and, if necessary, cleaning.

Pig feed against salmonella

The AMS and ACID concepts from deuka are aimed at farms with salmonella pressure. The feeds are adapted to the needs of pigs in different fattening phases. Their acidity and crude fibre content counteract salmonella contamination. The feeds thus offer a valuable component in the fight against the bacteria. Sow farmers can achieve similar effects by feeding a modern concept with an acid supplement and adjusted raw fibre content (e.g. digest).

Conclusion

- Salmonella infections are relevant to the health and welfare of humans and pigs alike.
- Pig farmers have a wide range of measures to choose from to combat an acute infestation or to prevent it.
- First and foremost, it is important to prevent the disease from entering the farm.
- If the herd is already infected, the spread should be prevented or slowed down.
- Finally, the resistance of sows, piglets and fattening pigs to salmonella must be strengthened.
- Special feed concepts with acid supplementation (e.g. AMS, ACID or digest) are an important building block here.

Further information:

- Information on the topic of "Salmonella" provided by the Federal Institute for Risk Assessment (BfR).
- Article "Significance of salmonella as a pathogen" on the website of the Federal Institute for Risk Assessment (BfR).
- Fact Sheet "Salmonella" of the European Food Safety Authority (efsa).
- Checklist "Salmonella - What to do" by deuka Tiernahrung Cremer.

Image source (top slider): © Indy Studio - stock.adobe.com