Sarcoptic Mange in Pigs – A review

Lee McCosker

28th August 2014

Introduction

Sarcoptic mange in pigs is caused by the mite *Sarcoptes scabiei var. suis* is and is the most important ectoparasitic disease to pigs (Iowa State University, 2014).

Despite a rapidly changing, modern pig industry and the availability of effective treatments, *Sarcoptes scabiei var. suis* prevalence in pig herds worldwide is 70 – 90% (Firkins, et al., 2001).

Sarcoptic mange, also known as scabies, causes considerable discomfort to pigs and can cause significant economic loss for the producer as well as impacting on the welfare of the animal. Sarcoptic mange has the potential to cause detrimental effects through reduced market value of the carcass, increased costs to maintenance of farm infrastructure due to persistent rubbing and scratching, reduced feed conversion efficiency and growth rates, impact on maternal and lactation behaviours and even mortalities (Davies, 1995).

Fast diagnosis and the ability to recognise early signs of the disease is critical to managing the negative impacts of sarcoptic mange. Unfortunately rubbing and scratching is often perceived as normal behaviour in pigs, often the cost of infestation is not readily recognised (Firkins, et al., 2001).

Sarcoptic mange also has animal welfare implications and as we are moving into an era of heightened interest in the ethics of farming animals for food, not addressing the impact of mange on the pig’s well-being could deliver unexpected consequences apart from the economic losses discussed in this report.

*Sarcoptes scabiei var. suis* – description and life cycle
Sarcoptes are a tiny white mite. Males range in size from 213-285 µm long and 160-240 µm wide. Females are actually larger than the male and range from 300-504 µm long to 230-420µm wide (Averbeck, Bert, & Stromberg, 2014). The mite, pictured below, is a tiny arachnids related to ticks and spiders with small suckers on their legs to hold onto their hosts (Sarcoptic mange mite, 2014) as illustrated in Table 2. (Averbeck, Bert, & Stromberg, 2014).

The mite’s lifecycle is complete in 14 to 15 days. The adult mite lays 30 – 50 eggs that hatch in approximately 5 days. These larvae become nymphs and then mature by 15 days of age (The Pig Site, 2014). While the mite can live on humans, it cannot reproduce on them so the human is a dead-end host for Sarcoptes suis (Morrow & Langley, 1999).

Pathogenesis

Mites spread from pig to pig by direct contact. The mites die out within 5 days away from the pig but animal housing, boar contact and the pig’s preference for laying close to one another ensure that constant contact will always offer the mite the opportunity to spread (The Pig Site, 2014). The ears of the pig are usually the first sites of colonisation by mites and from here they spread over the body to the legs and tail (Iowa State University, 2014).

The mites usually cause intense itching associated with a hypersensitivity reaction to parasite. The hypersensitivity stage usually subsides after several months and a rough and thickened and encrusted skin develops (Merck Veterinary Manual, 2014)

Hypersensitivity
The mite dissolves the pig’s tissue with strong digestive enzymes and the sucks up this liquid (Veterinary Entomology, 2014) and the skin of the infested pig becomes sensitised. After approximately three to eight weeks after initial contact with the mange mite, a severe allergy may develop. Tiny red pimpls will cover the animal’s skin. Hypersensitivity causes intense irritation and scratching (The Pig Site, 2014).

Clinical Signs

Constant scratching and rubbing are typical signs of mite infestation and can be more obvious when the pig’s skin is first warmed by sunlight resulting in increased activity of the mites (Iowa State University, 2014). Dirty ears and hyperkeratosis may also indicate mites and infestations can cause skin lesions that vary in appearance from minor skin irritation to obvious crusts (Averbeck, Bert, & Stromberg, 2014). Mites can however be present without overt clinical disease while still affecting herd productivity (Davies R. P., 1995). Two clinical forms of
infection are recognised. One is a hyperkeratotic form that commonly affects the breeding sows and the other, a hypersensitive form that generally affects younger, grower pigs (NSW Department of Primary Industries, 2012).

**Diagnosis**

Sarcoptic mange can be identified by the clinical signs above but diagnosis needs to be confirmed by examining skin scrapings, preferably from the ears. The disease often remains latent with only a few mites present (usually in the ears) without causing any symptoms until the disease suddenly breaks out in a few pigs and is quickly transmitted to other animals (Parasitipedia, 2014). Davies, Moore, & Pointon, (1991) found that pig herds in Australia show an increase in sarcoptic mange in winter and spring.

Merck Veterinary Manual (2014) suggests that diagnosis is best performed by a combination of approaches: scratching index, examination of skin scrapings, clinical signs, dermatitis score at slaughter and ELISA for antibody detection.

Demonstration in skin scrapings of the presence of the mite is the only diagnostic tool that offers a conclusive diagnosis with 100% accuracy (Kessler, Matthes, Schien, & Wendt, 2003).

**Treatment**

Diagnosis and treatment should be made based on the entire herd and not just individual animals (Averbeck, Bert, & Stromberg, 2014). Control of mange rather than an attempt to eradicate mange is common in the industry. While eradication is possible it is not easy (Davies R. P., 1995). Jensen, et al., (2002) found that a single injection of Dectomax (Doramectin) to a 21 sow naturally infested herd was effective in eliminating mange mites under experimental conditions.

Firkins, et al., (2001) also found that a single injection of doramectin given to artificially infested sows pre-farrowing prevented infestation of mites in their piglets.

**Table 1. Efficacy of doramentcin at 300ug/kg against Sarcoptes scabiei var. suis** (Averbeck, Bert, & Stromberg, 2014)
Economic Losses

An infestation of mange mite can have an adverse impact the economic performance of a pig herd by depressing daily weight gain and feed conversion efficiency. Performance losses in the sow result from fewer piglets born and slower growth compared to non-infested pigs costing from US$84 to $115 per sow (Firkins, et al., 2001).

Ineffective mite treatment and the prophylactic treatment of pig herds (e.g. treating sows in the last few weeks before farrowing or treating the herd at set intervals during the year) will not eradicate the mites from the herd and instead reduces the degree of infestation to subclinical rates that can go on undetected (Wallgren & Bornstein, 1997).

Carcass monitoring at the abattoir can see the producer severely penalised as the inflammatory nodules that have developed during the hypersensitivity stage of the disease are much more apparent on the carcass. These marks on the skin are scored according to the extent of damage and may indicate little carcass damage or may require that the pig be severely trimmed or skinned (Department of Agriculture, Fisheries and Forestry, 2014).

In herds that have a severe mange problem, it is anticipated that penalties imposed by processors will decrease the value of the carcass by 15-45% (Davies R. P., 1995).

Conclusion
The economic effects of Sarcoptic mange are often underrated by pork producers who fail to recognise the clinical signs of the disease in their herd and the severity of it. Sarcoptic mange can severely infest a pig herd while not showing many signs of illness in the animals. It is usually when productivity declines that the cause is investigated and by then the infestation has affected the entire herd and impacted on growth and reproductive performance requiring a robust treatment and prevention strategy to be put in place.

Sarcoptic mange impacts severely on the welfare of the pigs and this is demonstrated by the animals’ preoccupation with scratching an irritation that can be so distressing that can result in bleeding. Pigs spend less time eating and use up energy in rubbing behaviours instead of growth. Sows are more likely to lay on newborn piglets when affected by mites and are generally less productive producing smaller litters.

The cost to the producer and the welfare of the pigs can be high and there is a need to manage and eradicate sarcoptic mange and understand the early symptoms and to have robust biosecurity measures in place to prevent reinfestation.
References


NSW Department of Primary Industries. (2012). External parasites of pigs. DPI Primefacts.

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