A newsletter for
pork producers

PigBytes

Issue 46 November 2020

In this issue

Alternative Feeds for Pigs

Jayce Morgan

There is growing interest in the reduction of food waste and creation of circular economies in agriculture. The use of livestock for the consumption of food waste and/or by-products of the human food chain is gaining traction.

Products already utilised by livestock include grain by products and bakery waste, oilseed meals, and human food that is past the use by date such as dairy products and confectionary. Damaged tins and jars of products rejected by buyers (eg fruit, spaghetti, beans) are also used on some units. Not all products are suitable for all species of livestock.

In this article we are looking at the role of pigs in the food waste discussion and things that need to be considered if you have access to food waste and are considering its use.

The recommended diet for pigs is a cereal grain-based diet properly formulated for amino acid content, digestible energy, vitamins and minerals which meets the needs of the pig's life stage be it growth, gestation or lactation. This diet recommendation also applies to pigs on pasture, since pasture alone cannot supply all the nutritional needs of pigs.

Feed is the major cost of production in pig production. To keep costs down some pig producers and hobbyists, seek alternative feed sources such as food waste and/or by-products from the human food supply chain. This can lead to false economy due to poor pig performance if the diet is not balanced for the nutrient needs of the pigs.

Factors to consider

There are important factors and questions to consider when looking at alternative feeds and these include:

- **Regulations** – Australia has strict swill feeding regulations around the use of food by-products and food waste as pig feed. Essentially ***it is illegal to feed, to allow or direct another person to feed prohibited pig feed; or to allow a pig to have access to prohibited pig feed; to collect, store or possess prohibited pig feed on a premises where pigs are kept; or to supply prohibited pig feed to a person knowing it will be fed to pigs***.

  Prohibited pig feed includes products of mammalian origin (meat) or any food that has been in contact with meat of mammalian origin. This means food waste from households or restaurants, and some bakery waste (containing meat) is prohibited pig feed. For more information visit Animal Health Australia Prohibited Pig Feed (Swill).

- **Nutrient content** – will the product be a beneficial addition to the pigs' diet? Just because its available doesn't mean it is suitable for pigs.

- **Cost benefit** – if you are replacing all or a portion of your pig feed with an alternative the benefits of the use of the alternative feed should be investigated. Usually feedstuffs are compared on a cost per nutrient value for example the cost per unit of energy or protein. The alternative might be cheap but not deliver the same amount of nutrients compared to the

feed you are replacing. Some nutrients maybe 'unavailable' via monogastric digestion.

- **Continuity of supply** – even though alternative feeds may be a good feed source for pigs, an irregular supply can have a negative effect on pig performance. Pigs do best with gradual dietary changes to give their digestive system time to adjust. Sudden changes could result in feed refusal or in gut ailments such as diarrhoea.

- **Gut capacity** – the smaller the pig the smaller their gut capacity meaning that they are restricted in the amount of feed that they can physically eat. Weaner pigs have a high demand for nutrients to fuel their body growth. Food needs to be nutrient dense and easily digested.

- **Moisture content** – feeds with high moisture content can mean that the nutrients are diluted, and pigs may not be able to eat/drink enough to satisfy their nutrient needs if the liquid feed is the major dietary component.

  From approximately 3 weeks of age milk ceases to meet all the nutrient needs of suckling piglets. It is around this time when introduction of creep feed is recommended. Creep feed is cereal based nutrient dense feed to introduce piglets to dry food, and to provide extra nutrients to maintain growth. The term 'creep' refers to the feed provision in a way that is only accessible to piglets.

  The feeding of waste liquid products such as dairy or alternative milks needs to be carefully managed – liquid feeding to large herds can mean the need for specialised feeding equipment and a high standard of hygiene. High moisture feeds may also require special storage facilities to prevent spoilage or mould growth which may contain toxins.

- **Fibre content** – fibre is inefficiently digested by pigs in their hind gut. Gut capacity will limit the amount of a high fibre feed a pig can eat. Dry sows are the pig group best able to adjust to and benefit from more fibrous food in their ration but only up to about 50% of their diet. Pigs on a high fibre diet will have a lower dressing percentage due to increased gut size.

- **Palatability** – some foods are not palatable to pigs and may contain tannins, lectins or other anti-nutritional factors that affect taste as well as digestibility.

- **Toxins** – sometimes feeds can spoil in certain weather conditions (extreme rainfall or drought events) which may result in mould growth and mycotoxins. Addition of mycotoxin inhibitors can be useful to protect pigs, but they cannot improve feed quality. Other feeds just contain substances that are toxic to pigs and should be avoided.

- **Chemical contamination** – it is recommended that a vendor declaration for feedstuffs accompany the feed you purchase. This is a requirement of QA programs. If this is not available be sure to keep records of purchases and deliveries, and samples of the feed (if possible) in case of problems. Chemical residues in your pigs will result in condemnation of pig carcasses and loss of markets.

- **Antimicrobial contamination** – colostrum milk from cows treated with dry cow antibiotics should not be fed to pigs.

- **Perishability** – waste products requiring refrigeration will go off quickly. Are the volumes available able to be used in an appropriate time frame?

- **Will the product negatively impact carcase quality?** A large proportion of pork is used for production of processed meat products – ham bacon small goods. These products need good quality pork and appearance of the product is important.

  Factors such as stress, genetics and diet can have a negative impact on the appearance and quality of meat. Pale-soft-exudative (PSE) and dark-firm-dry (DFD) are the most common faults of pig meat and affect appearance and cutting quality of pork. Overuse of unsaturated vegetable oils in pig feed can result in soft oily fat which will become rancid faster than normal.

It pays to do your research. Sometimes a pig nutritionist can assist you to make a reasonable diet out of alternative feeds, but they cannot make poor quality feed wholesome!

Useful references

Swine Nutrition Second Edition 2001 edited by Austin J Lewis and L Lee Southern

Nontraditional Feed Sources for Use in Swine Production 1990 edited by PA Thacker and RN Kirkwood

A Bit about Fibre

Jayce Morgan

Fibre is an umbrella term for different types of carbohydrate and other non-carbohydrate (lignin) molecules which are resistant to the digestion processes in the small intestine. Some fibres such as lignin are indigestible, while others progress to the large intestine and caecum where they undergo microbial fermentation.

Fibre molecules provide the structure and scaffolding in plants as well as functioning as energy storage molecules depending on the size of the molecule. Fibre can be soluble – pectin, inulin, psyllium – or insoluble – cellulose, hemicellulose and lignin.

Carbohydrates can be monosaccharides (glucose, fructose), disaccharides (sucrose, lactose), oligosaccharides (maltodextrin) or polysaccharides (starch). Fibre includes the non-starch polysaccharides and oligosaccharides.

If a pig is unused to large amounts of these components in their diet, they may suffer a setback until their gut adjusts for more microbial fermentation. This can mean growth of that area of the gut and adjustment for energy from the different products of digestion – more of the volatile fatty acids (VFAs) such as acetic, propionic and butyric acids.

This sounds complicated but the point of this explanation is that just because a product in a biscuit mix looks useful to the pig, some components of the mix may have different effects in digestion. Sudden change from high fibre to lower fibre products may cause digestive issues such as scours and reduced performance.

If you seek to utilise by-products of the human food chain work with a nutritionist to make sure your pigs are getting a balanced diet.

Thorny Headed Roundworm could be a problem on free range farms

Regina Fogarty

A chance inquiry and photo by a NSW pig hunter to Mr David Smith and Mr Richard Varel of the NSW Game Licensing Unit got us interested in this roundworm and its role in Australian piggeries. These parasites are rarely seen in domestic pigs.

This intestinal worm with the extraordinary name – *Macracanthorhynchus hirudinaceus*, is commonly known as the thorny headed round worm. It could be a problem on free range farms where pigs would have access to dung beetles and/or cockchafer beetles (the larvae of which are the “white grubs” commonly found in soils) which would be happily consumed by pigs.

The lifecycle involves the passage of eggs in the pig’s dung which are then consumed by grub larva of the beetles. Here they develop for two to three months through to the beetle stage. Either beetle or grub are then eaten by the pig and the worms attach to the gut wall.

After a further 2-3 months the worms produce and pass eggs into the intestine.

Figure 1: Severe lesions on the intestinal wall of a feral pig.

Source: NSW Game Licencing Unit

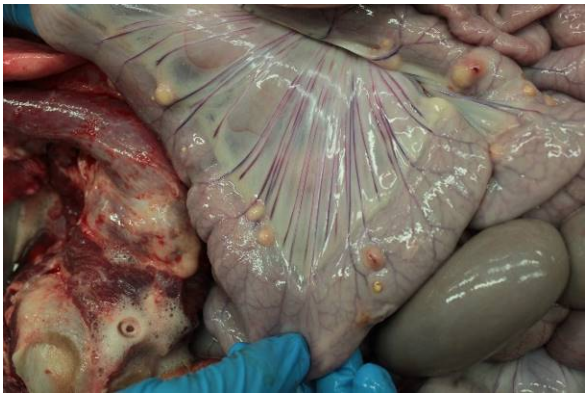
Figure 2: Cockchafer beetle and larvae.

Source: Agriculture Victoria

Infection in intensively housed farms will not occur as the pigs will not be able to access the grubs or beetles, but it is worth considering on free range farms. The eggs are, like ascarid eggs, and quite long lived in the environment (some years). However, the ascarid lifecycle is direct – pigs pass eggs through their dung, which can then directly infect another pig.

There have been cases where people have become infected following the eating of raw beetles but handling the worms or even the eggs in pig faeces will not lead to an infection in humans.

Figure 3: Domestic pig intestine with nodules of thorny headed worm.



Source: NSW DPI

This is a large round worm like the ascarid worm, but unlike the ascarid that is free living in the intestines, this one lives attached by its large spiny mouthparts to the small intestine, which may cause great damage to the gut wall.

Figure 4: Thorny headed worm attached to a nodule in the small intestine.

Source: NSW DPI

The worms are up to 40cm long and 8mm in diameter. Also, unlike the ascarid which is smooth the thorny headed worm is covered in transverse wrinkles. In attaching to the gut wall considerable damage can be done to the wall of the intestine as shown in the photos. This can lead to perforation of the gut wall and peritonitis. Symptoms would be diarrhoea, fever, abdominal pain and if the pig survives the initial insult - emaciation.

Control is not particularly difficult, as commonly used wormers to control ascarids will also kill this one. Consult your veterinarian to make sure you have a long-term plan to manage this parasite.

Hot weather is coming

Regina Fogarty

Summer in Australia brings with it heat, high levels of ultraviolet radiation and hot pigs who are reluctant to eat, so there are plenty of things to think about to make sure your pigs come through unscathed and with their production intact.

Heat

While pigs do tolerate a wide temperature range, as temperatures rise feed intakes are impacted, initially causing pigs to eat preferentially in the cooler time of the day. Growth rates are reduced in progeny. Lactating sows will not only produce less milk for suckers, they become restless and more likely to overlie piglets. Through this reduction in feed intakes the lower energy levels also impact on reproductive rates post weaning ie seasonal infertility.

Upper critical temperature occurs when a pig can no longer loose sufficient heat by panting and their internal body temperatures rise to critical levels. This can lead to death. On concrete floors where there are no cooling sprays or air movement that temperature is around 35 degrees in dry sows and around 36 degrees in growers. Efficient cooling systems can raise the raise the upper critical temperature by 3 degrees.

So, checking the effectiveness of cooling systems which usually rely on enhanced air flow and spray cooling systems is important. Just wetting pigs down will not cool them. Air flow over wet skin leads to evaporation of the water off their skin and cooling. Not allowing the environment to dry between spray periods just raises humidity and provides no relief but brings its own problems.

Ensuring that drinking water at the point of the drinker remains cool is also important. Another strategy is to ensure that lactating sows are given top up feed late in the day to ensure they are able to feed over the cooler hours of the night if they want to.

Stress Impacts

Sow mortality rises with higher temperatures particularly in lactating sows, where the high feed needed for milk production raises the body

temperature. Coccidiosis causing a pasty scour in piglets from 7 to 14 days of age is also generally seen more often in summer as the warmer humid conditions favour piglet infections and survival of the parasite in the environment.

Diseases associated with stress periods are likely to flare up during heat stress periods ie actinobacillus pleuropneumonia and erysipelas.

Sunburn

White pigs are very prone to sunburn and the provision of shade or wallows is critical. Young pigs not previously exposed to sunlight are often seriously affected. The skin along the back and ears reddens within a few hours, with affected areas being warm and painful to the touch. Presumably due to pain, badly affected pigs walk very carefully, may show bouts of muscular twitching and even jump into the air or drop onto the ground on their chest. The skin blisters and becomes dry and scaly and peels. In severe cases parts of the ears and tail may become necrotic and drop off. They should be given pain relief and moved to shade. Do not use cold or freezing water to cool the pigs down – use tepid water as the shock of cold water has been known to kill pigs.

Photosensitisation

While this can occur at any time of the year, exposure to sunlight is required. The cause is a combination of sun exposure and ingestion of materials that are “photodynamic” and leads to conditions similar to sunburn in white skinned pigs or in any white skinned areas on multicoloured pigs. Typical plants that cause photosensitisation in pigs include buckwheat, St Johns wort, brassicas and Lucerne. It has also been seen with ingestion of aphids and some medications including tetracyclines and sulphonamides. Treatment requires the animals to be placed in darkened housing and nursed through to recovery.

Water

The most important principle is to keep water up to the pigs at all times and keep it cool to encourage drinking. Water outages in summer will more quickly lead to the clinical salt poisoning than during cooler weather.

Cysticercosis case in an Australian woman – a reminder for pig producers

Regina Fogarty

The first home grown finding of cysticerci in an Australian was recently reported. A 25-year old who had been suffering from severe headaches for some years underwent a more intensive investigation following migraines lasting six straight days. Surgery confirmed the presence of cysticerci from the human tapeworm *Taenia solium* in her brain.

Historically this disease was once widespread globally and now is mostly confined to developing countries in Africa, Asia, and Latin America which have free ranging pigs able to ingest human faeces, allowing the human – pig lifecycle to continue.

With the significant rise in international travel it is likely to turn up in countries, like ours where the tapeworm is not known to exist. Australia has seen cases in humans previously, but only in people who have come from or visited countries where the parasite is found.

The lifecycle of the parasite is complex involving both humans and pigs.

The tapeworm is carried in the intestine of humans, causing little concern. The tapeworm eggs are passed in the faeces where they contaminate the environment. Pigs become infected after ingesting the eggs. The eggs hatch in the intestine of the pig, then the larvae penetrate the gut wall and move with the circulation where they become trapped in the small blood vessels in muscle and develop into the infective stage called cysticerci.

In pigs, these cysticerci develop in any muscle but are commonly found in the heart, jaw, tongue and limbs, and remain infective for up to 2 years. They are round, white, fluid filled and about 1cm in diameter.

Humans generally become infected by eating raw or undercooked pork. The ingested cysts develop into adult tapeworms in the intestines and can survive for many years.

Human tapeworm infections can lead to human cysticercosis. Cysticercosis is caused when people ingest tapeworm eggs from the faeces of a person with an intestinal tapeworm. In humans, the larvae lodge in the heart, the central nervous system, and preferentially the brain. Infection occurs through poor hygiene, for example people with tapeworms not washing their hands properly and passing the eggs onto others or ingesting them themselves.

This is a very serious condition, recognised by the World Health Organisation as a “major neglected disease”. It is difficult to identify and to treat. Clinical signs of brain involvement include headaches, seizures, meningitis and dementia. It is

considered the main cause of preventable epilepsy in low income countries.

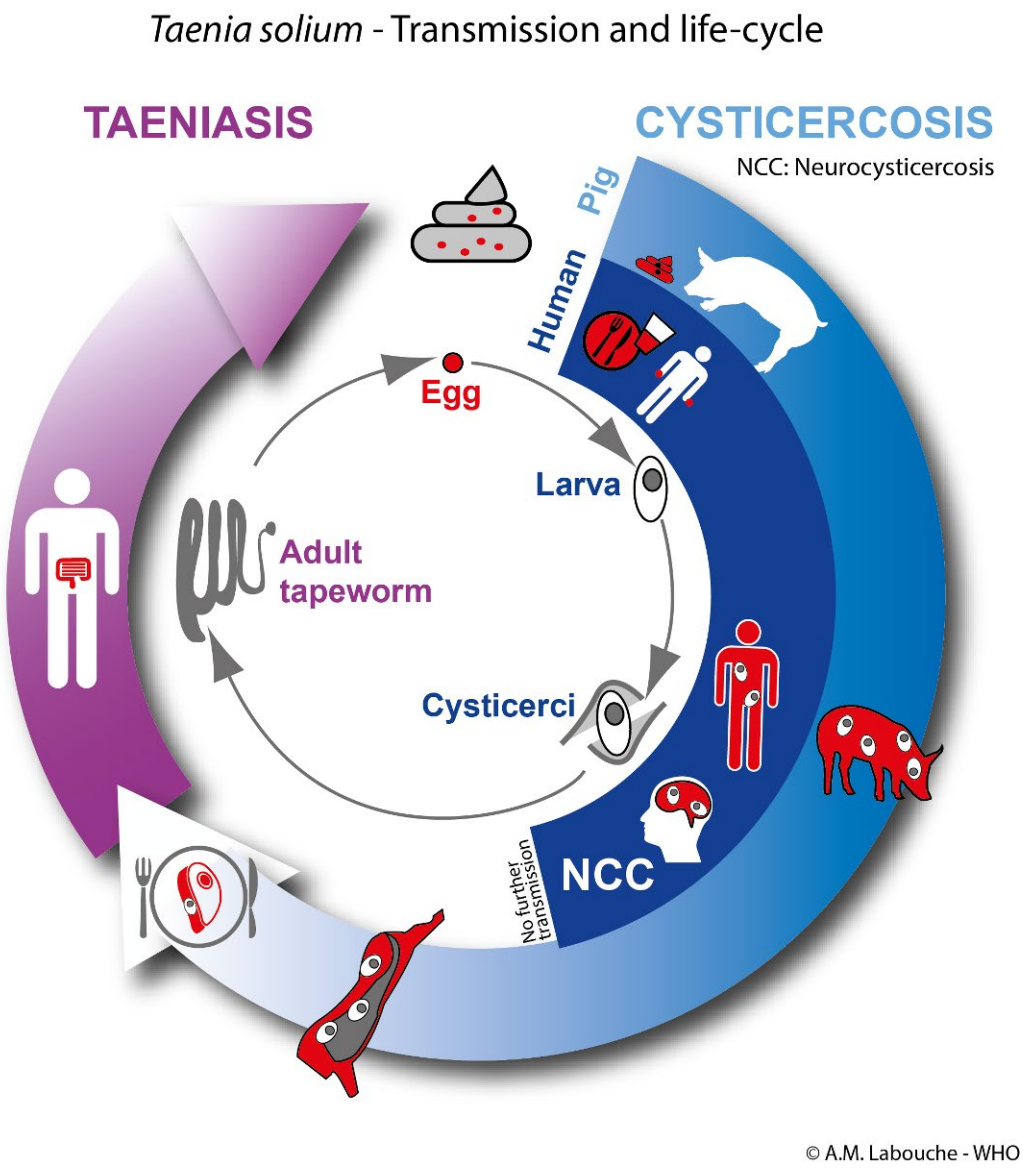
It is unknown how the Australian woman was infected as she had never travelled outside Australia and did not have a tapeworm when examined. The most likely source was some form of contamination from a tapeworm infected person.

In Australia meat inspectors look for “pork measles” – a sign of the cysticerci in muscles. They are exceedingly rare; a 1995 US study reported a condemnation rate of 1 in 75million pigs. Effective sanitation systems such as those in Australia, ensure separation of pigs from human waste streams and are a highly effective control system.

There is no need or rationale for any treatment of pigs, however – thorough worming of people who have come from or returned from countries in Asia, Africa and Latin American may be a very important safeguard. The preferred drug treatments require a prescription.

It does remain critical to maintain hygiene standards on-farm with staff washing hands and maintaining separation between pigs and human faeces. With a rise in free range farming systems, and the possible access by pigs to wastewater, greater attention should be paid to this parasite.

Figure 5: Graphic for the *Taenia solium* transmission and lifecycle.



Employee turnover – a major challenge for the pork industry

Sara Willis

High employee turnover is a feature of the pork industry. There is limited recently published data available in Australia, however anecdotal evidence suggests an annual turnover in Australia of 25% with a range from 15- 50%.

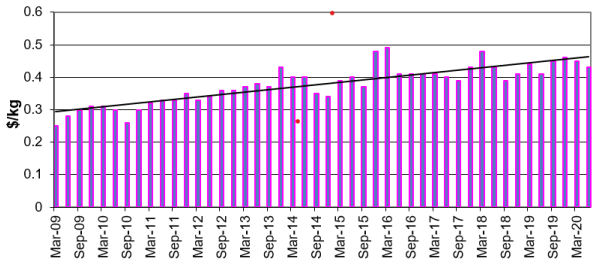
An article by Carroll in the November 2017 Farm Pork Journal quotes a US National Pork board survey in 2016-2017 which reported an annual turnover of 35.03% and 20.34% for large and mid-size production units respectively.

A Canadian study by the University of Guelph and the Ontario Pork Board in 2008 quoted an annual employee turnover figure of 39.6% on participating farms. A Western Australian study by Evans and Bent in 2002 quoted an employee turnover of 34.3 % on responding pig farms in WA.

The Farm Pork Journal article suggests that the cost of replacing a stock person is 150% of their wages and for a manager the figure could be 250% of their annual salary. Using the figures stated the cost of replacing an experienced stockperson (Qld Pastoral award Piggery attendant level 5-7) would be in the order of $75 000.

After feed cost, labour is the second highest cost of production. Figure 1 shows the movement in average labour cost over the last eight years from around $0.25/kg to $0.40/kg of pig meat sold. The cost is influenced by the level of staff turnover.

Figure 6: Pork production labour cost March 2009 to March 2020.



Source: Toowoomba Focus Group

High employee turnover is a drain on profits. Departing employees can be less diligent leading to a decline in performance for two months or more before they move on. Employee recruitment is a costly exercise with advertising, interviewing and checking references taking management time. In addition, once a suitable employee is engaged there are the costs of induction, training and supervision before herd performance returns to normal.

Experience suggests areas of production most affected by employee turnover include health as vaccination and treatment programs might be compromised as well as farrowing rate and pre-weaning piglet mortality.

It is possible to quantify the benefits of improvements in employee and team relationships, on farrowing rate and pre-weaning mortality in the current Qld financial climate.

For a 1250 sow breeding herd weaning 9.9 pigs/litter at an average of 24 days of age an increase from 13 non-productive days/parity (resulting in 2.4 litters per sow per year) to 20 non-productive days per parity (resulting in 2.3 litters/sow per year) over a period of 16 weeks could cost a business around $65k. Sixteen weeks is considered to be the period during which production might be lost when an employee plans to resign, resigns, is replaced and finally operating effectively. Many managers and owners will have experienced a drop-in farrowing rate after a stock person responsible for mating sows has departed.

In the same herd, departure of a farrowing room attendant could result in an increase in pre-weaning mortality. An increase of just 4% in pre weaning mortality could cost the business around $70k over a 16-week period. In both examples it is assumed the average sale weight on the unit is 80kg dressed carcase weight, an FCR deadweight of 3.0, an average feed cost of $450/tonne and an average pig price of $3.50/kg dead weight.

Strategies for improving staff retention:

Communicate. Poor communication is a common issue when it comes to employee dissatisfaction and high turnover. Consistent and clear communication is essential to keep your workforce engaged.

Listen, listen, listen. Hold regular “toolbox” meetings with minutes taken and actions implemented to address challenges and celebrate success.

Provide a detailed job description. Do your part to help your employees succeed by setting clear expectations that can result in rewarding work. Often, I find that the employees understanding of the job description differs considerably from the manager.

Show respect. Family or not, employees do their best for people who treat them well. You can achieve this in a variety of ways that include being responsive, admitting to your mistakes,

demonstrating that you value their time and energy, and creating an inclusive culture.

Say "thank you" for their work and effort. Reward your employees for their contributions. Take the time to make note of their successes and find effective ways to let them know that they are appreciated.

Promote Employee Development. Invest in your employees by giving them opportunities for training and career development. Understand your employee's goals, ambitions and those of their family.

Monitor job satisfaction. Ask for regular feedback on how they are feeling and any issues they are experiencing. This will allow employers to recognise potential problems before they develop into big ones.

Trust your team. Inspire your team to be highly committed to their role. Be supportive if they show interest in taking on a new challenge.

Create a positive environment. Stay positive, even when results are disappointing. Employees that trust you will come to you when issues or conflicts arise.

Think before you react. Discuss a solution together so your employee can learn and make sure it doesn't happen again.

Get creative to provide incentives. There are lots of incentives you can offer employees that don't include a pay rise - employee barbecues, flexible hours, health related benefits (flu vaccination), service awards, gift cards for a job well done.

A happy, healthy committed team is in the best interests of the employee and employer.

Have you ever wondered…….?

Anke Woeckel

Have you ever wondered what 'Diamond Skin Disease' looks like, what causes Erysipelas, its economic impact and how it can be prevented?

The pig disease sometimes referred to as 'Diamond Skin Disease' or Swine Erysipelas is caused by a bacterium named *Erysipelas rhusiopathiae*. The first complete description of the disease was published in 1886 by Friedrich Löffler.

Pigs are considered the most important reservoir for *E. rhusiopathiae* which can cause erysipelas in a variety of animals such as sheep, cattle, horses, dogs, mice, rats, fresh and saltwater fish, marine mammals, turkeys, chickens, ducks, geese, starlings and blackbirds.[1] This needs consideration for the risk assessment for erysipelas on-farm and for development of farm biosecurity measures.

Swine erysipelas occurs sporadically in the swine population worldwide. All pig producing enterprises, regardless of farm size, or housing style need to be vigilant about the occurrence of erysipelas. The diamond or rhomboid skin lesions are characteristic for the ACUTE form of the disease only. The disease can also be subacute and chronic with less obvious symptoms, but all disease forms have high economic impact.

Figure 7: Acute severe skin form of swine erysipelas with extensive small raised pink-red lesions and some developing dark scabs.

Source: Courtesy of Dr Ronald D.A. Cameron

In pigs, disease manifestations are seen mainly in adults and growers, whilst maternal immunity plays a role in protection against erysipelas in younger animals. *E. rhusiopathiae* has zoonotic potential and can cause 'erysipeloid' in humans with a clear occupational link to meat and fish industries.

The organism resides in the pigs' tonsillar tissue. Healthy carriers can shed the organism in their faeces or via oronasal secretions. These carrier pigs are an important source of infection for other pigs. Infection is by ingestion of contaminated feed, water, or faeces and through skin abrasions. When ingested the organism can survive passage through the hostile environment of the stomach and intestines and may remain viable in the faeces for several months.

Acute illness can involve many animals, with sudden and unexpected death. Other signs will include fever, withdrawal from the herd, squealing, stiff gait, weight shifting, depression, inappetence, diamond skin lesions and necrotic (dead tissue) lesions on tail, ears, and back of the thighs.[4]

The diamond skin lesions can appear 2-3 days after infection and disappear 4-7 days after first appearance. The lesions are caused by generalised damage to blood vessels due to

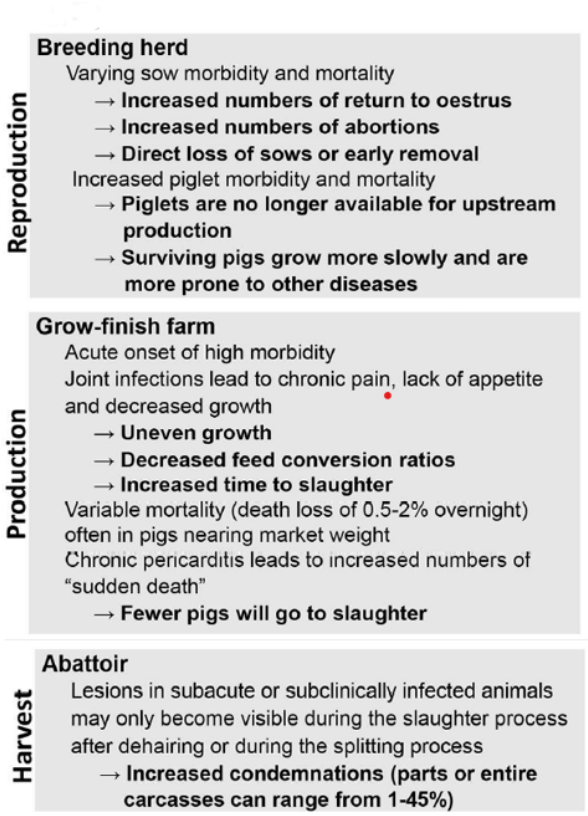
thrombosis and interference of microcirculation in capillaries and venules.[3]

In breeding sows, abortions or increased pre- and post-farrowing vulvar discharge may be observed, as well as smaller litter sizes and reduced numbers of live born piglets.[4]

The subacute form of the disease can be unnoticed and eventually manifest as chronic disease which is characterised by enlarged joints, lameness due to arthritis and endocarditis. The chronic form of the disease may also affect growth rate and increase trim losses in processing.

The economic losses are directly related to sow mortality, abortions, trim loss in processing and or carcass condemnation.

Figure 8: Impact of erysipelas in different production stages in pigs.



Source: Opriessnig et al.2020

Erysipelas is not a notifiable disease therefore the direct and indirect economic impacts can be difficult to assess. A recent publication[4] investigated the economic impacts for three different countries. Based on the provided example calculations for the United Kingdom, a 400-sow breeding herd with an acute outbreak could lose 388 pigs due to abortions and sow mortality.

For 2008, this would have cost GBP £14,000 (AUD$25,550).

A late/chronic erysipelas outbreak in a 600 head finisher herd could result in ~58 pigs being euthanised and 31 condemned for a total loss of GBP £17,451 (AUD $31,850) over a six-month period.

Prevention – Pigs can acquire immunity to Erysipelas via the following:

Exposure to the organism followed by an active immune response to Erysipelas, with or without disease manifestation

- Erysipelas is in the environment – best practice management of the herd for hygiene, stocking density, herd health status, rodent control and biosecurity standards will assist with the level of environmental exposure to Erysipelas.
- Risk factors such as sheep grazing nearby, eco-shelters with or without dirt floors, pigs raised outdoors, or previous history of Erysipelas outbreaks may require additional protection measures such as progeny vaccination

Vaccination

- Several multivalent commercial breeder vaccines are available, and it is recommended that selected gilts receive two doses 3-4 weeks apart shortly before entering the breeder herd
- It is good practice to give a booster dose to gilts 3 weeks before farrowing. Sows and boars should be vaccinated routinely every 6 months for protection
- Single valent (only erysipelas antigen containing) commercial progeny vaccines are also available and where risk factors are present two doses 3-4 weeks apart are recommended
- The vaccination schedule should be discussed with your veterinarian.

Maternally derived antibodies (MDA) acquired from the sow's colostrum by the newborn piglet

- MDAs will provide short term protection from disease, but the response is dependent on the quality and quantity of colostrum intake as well as the post farrowing timing of colostrum intake.
- Practices like split-suckling in large litters can improve colostrum uptake and should be discussed with your veterinarian
- The degree of environmental challenge (carrier animals, organism contamination of surrounds)

as well as the Erysipelas vaccine schedule will also determine the protection provided via colostrum.

- Maternal immunity will not last past 12 weeks therefore any disease seen in the grower herd cannot be classed as a failure of the breeding vaccine schedule.

In breeding herds vaccination has been shown to increase the numbers of liveborn pigs per litter and to decrease farrowing intervals. Breeding herd vaccination has also been shown to decrease the incidence of periparturient vulvar discharge. Consequently, vaccination against Erysipelas at every breeding cycle is standard in most pig breeding herds.

Protective immunity after vaccination is generally thought to range between 4 and 6 months. Thus, pig breeding herds are typically re-vaccinated in every cycle or at least twice a year.

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1 Diseases of Swine 10th edition B.Straw et al., Chapter 54,p.750-759
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3 Swine Disease Manuel 4th edition E.J.Neumann et al., Chapter 9,p.21-22
4 Opriessnig T, Forde T and Shimoji Y(2020) Erysipelothrix Spp.: Past, Present, and Future Directions in Vaccine Research.Front. Vet. Sci. 7:174.

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