A newsletter for pork producers

PigBytes

Issue 48 June 2021

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Vaccinate staff now for seasonal influenza

Regina Fogarty

Now is the time to plan and organise vaccinations for any of your team that come into contact with pigs.

Because of the high infectivity of human influenza A to pigs, ensuring every one working with your pigs receive the annual seasonal flu vaccinations will deliver two benefits.

Firstly, vaccinations significantly lower the likelihood that staff will get flu or lower the severity of the infection. Staff should then remain healthy over the winter months. If staff do not get the flu, then the major cause of influenza outbreaks in the pigs in piggeries (i.e. sick workers) will not be present.

Sick pigs can infect workers, so dampening down the disease is critical to farm production and staff health.

Influenza A viruses are a major cause of pig disease internationally and are increasingly being detected in cases of respiratory disease in Australian herds. They are considered ubiquitous in pig populations worldwide and many countries use multiple annual vaccinations of breeders and progeny as part of their control strategy for chronic respiratory disease.

As with human flu vaccines, keeping the vaccine strains up to date with the constantly changing virus population is critical to vaccine efficacy and achieving this with animal vaccines is very difficult and adds to costs.

There are no vaccinations available for pigs in Australia, so keeping influenza A out of herds remains critical. Because the virus strains found in herds in each country vary and they continually reassort (change), potentially becoming more virulent, those vaccines designed and developed internationally will not be effective here.

In pigs, influenza A is a rapidly spreading viral disease typically producing a fever with a sudden onset across a group of pigs, dullness, discharges from the nose and eyes, conjunctivitis, sneezing, lack of appetite, weakness, weight loss and a propensity to lie down. These signs are followed a few days later by a barking cough over a short course of five to seven days. Some pigs may have very laboured breathing. Unless other conditions complicate the course of the disease, pigs tend to recover with relatively low mortalities.

There is no specific treatment for influenza A infection. Your veterinarian may be able to prescribe treatment to manage the fever or treat secondary infections.

Influenza can affect all groups in a piggery, and in severe cases can cause sows to abort or the birth of small weak born litters.

Influenza viruses are transmitted in droplets and aerosols created by coughing and sneezing and by contact with nasal discharges. It will spread rapidly through a piggery and in continuous flow piggeries the disease can keep circulating.

Influenza A viruses detected in Australian pig populations have generally not been associated with significant production issues, nor have they been associated with public health issues.

This is not the case in other some countries where the disease is endemic. Higher risks are seen where pigs live in close proximity to people or where there is frequent mixing of pigs and people at pig fairs and pig show circuits. These shows can attract large numbers of exhibitors and spectators, including young susceptible children, and involve a lot of mixing of pigs and people.

The 2009 flu pandemic was associated with a strain of virus that evolved overseas where bird, human and pig strains had mixed and reassorted to produce a particularly virulent strain in people. Eleven years later, we still see viruses in Australian pigs that are closely related to that pandemic strain.

In Australia influenza A is a notifiable disease ie it is a requirement to alert the relevant government authorities of disease outbreaks.

Officially, the policy for the response to an outbreak of influenza A virus in the Australian pig population will be determined by a risk assessment, taking into consideration, for example:

- how early the outbreak is detected,
- the extent of the outbreak,
- the location of affected premises,
- the subtype of virus involved and its zoonotic potential,
- the nature and severity of any clinical signs,
- and whether other respiratory pathogens that could complicate the clinical picture are present.

The risk assessment and development of control strategies will be undertaken by the relevant jurisdictional Chief Veterinary Officer (CVO). The jurisdictional CVO will collaborate with public health authorities when a zoonosis is suspected.

No action will be required unless the risk assessment indicates an unacceptable threat to animal or public health.

Good farm biosecurity and management practices are the most effective measures to prevent the introduction and spread of influenza A viruses.

Critical practices include keeping the pig herd closed, not allowing visitors, not allowing staff to work on other pig sites and not allowing staff to work near pigs if they are sick with flu-like symptoms.

One easy practice that also ensures staff do not get the flu over winter (and who wants it?) is to ensure annual seasonal flu vaccinations. Many larger piggeries pay for staff to get the annual vaccinations recognising the dual benefits to worker health and pig health.

Melanoma and carcass impacts

Jayce Morgan

One of the most perplexing issues for pork producers can be feedback from the abattoir that reports information about carcass condemnation.

Many small-scale farmers find the condemnation for melanoma particularly confusing as they are unaware of problems in their herds. However, melanoma is not restricted to outdoor herds as it also has a genetic component.

As part of the Health4Wealth project a series of factsheets has been created and are located on the Pig page of Animal Health Australia website under the Diseases icon.

There are 18 factsheets and they cover general topics such as Pig Abscess, Pig pneumonia, Pig Melanoma and others. The factsheets describe the condition, how common it is on farm, how it is spread, carcass impacts, treatment and prevention.

Did you know that melanoma occurs mostly in pigs with black skin, most often Duroc and Duroc crossbreds?

The Duroc (and its crosses) and the Vietnamese pot-belly swine have been known to inherit a predisposition to melanoma. Other occurrences of melanoma are generally considered to be rare and sporadic.

Lesions may vary in size from a few millimetres to over 10 cm in diameter. Size of lesions and extent to which the lymph nodes are involved will determine whether the site of the lesion is trimmed and condemned, or whether a part or the whole of the carcass is condemned.

Spontaneous melanoma is not able to be prevented, however, inherited melanoma can be prevented by not breeding with any animals found to have melanoma.

Source: Health4Wealth Melanoma factsheet Animal Health Australia Pigs>Diseases

Attention to details

Jayce Morgan

We've all heard the saying "the devil is in the detail/s". Similar businesses can flourish or fail due to management and the attention to details.

On-farm biosecurity and the recording of what you do for biosecurity is being encouraged a lot more in recent times due to the threat of African Swine Fever (ASF).

Successful biosecurity plans are part of everyday work practice and are regularly reviewed with all farm workers whether they are paid staff or family members. When complacency creeps in so too do biosecurity breakdowns. Granted they are not always devastating but they should serve as a reminder that details matter.

A recent article on the PigSite by Pig Health Today reported on swine disease outbreaks and on-farm risk events. “Biosecurity has become the all-inclusive protector of swine herd health” but despite “research, protocols and training, disease outbreaks remain a regular occurrence. Why is that?”

Derald Holtkamp of Iowa State University makes a series of interesting points in the article:

- Producers and veterinarians are most interested in improving biosecurity after a disease outbreak occurred
- Its important to look at the entire production process; to think beyond a list of biosecurity practices
- Its unlikely for a single failure to be responsible for introducing a pathogen into a susceptible herd – rather it is the result of a series of failures
- The focus tends to be on perfection rather than layering of biosecurity options – nothing is 100% effective if not followed correctly
- Frequent events carry the greatest risk in terms of biosecurity. Nineteen PRRS outbreak investigations 2015-17 showed carrying-agent-entry events that rated high most frequently were employee entry, cull-sow removal and repairs done inside the barn (pig shed). You need employee and/or family engagement so they understand the what, why and how of biosecurity.
- Review of biosecurity practices can highlight vulnerabilities – people’s attention to detail and commitment tend to slip
- Invest resources where you get greatest effect. You can’t do everything at once
- Biosecurity is active and continuous process to manage risk and control hazards – it will never be done.

Biosecurity is a valuable tool used properly. It can also be a daunting task to review your farm’s approach. Outside eyes are beneficial – your vet, Local Land Services biosecurity officers can help, or there are checklists of beneficial practices for farms.

However, all farms are different with different capabilities and resources. Not all approaches suit all farms. Investigate the greatest risks on your farm, begin there and strive for improvement in small steps. You can do this, and details are important.

Water Quality – an opportunity to achieve better pig health, growth and welfare

Sara Willis

When performance problems arise, feed is commonly analysed, but water quality is often overlooked despite its importance.

Water quality and its access should be part of an integrated farm management approach when there are on-going animal health or performance issues.

Water quality can be evaluated in terms of its physical, chemical, and microbiological composition.

The physical attributes (colour, turbidity, odour) tend to be of little practical importance but can be symptoms of other problems that may need attention.

The chemical characteristics (e.g., too hard, too much iron, too much sulphate, too acidic) can affect palatability, the effectiveness of some water-soluble antibiotics, cause scouring and reduce water flow.

The microbiological characteristics (*E. coli*, Coliforms) can impact health and performance.

Water quality is of particular importance when considering that the antibiotic dose rate at the drinker may be compromised and in turn the administration dose provided to the pig.

Good quality water and management is essential for appropriate antibiotic use and in turn antimicrobial stewardship.

There are many criteria that are used to determine water suitability, but it is generally the mineral composition, pH, and bacterial contamination of the water that are the most important.

Minerals commonly found in ground and surface waters are sulphates, chlorides, bicarbonates, and nitrates, which form salts with calcium, magnesium, or sodium.

The combined concentrations of these minerals is called Total Dissolved Solids (TDS) or sometimes referred to as Total Dissolved Ions (TDI).

If the level of TDS is less than 1000ppm then the water is of good quality. Once the TDS reaches

3000ppm care needs to be taken as it may cause temporary refusal of water and temporary diarrhea.

Levels of TDS up to 5000ppm are potentially still acceptable if the predominant anion in the water is not sulphate. Over 5000ppm, it must be carefully examined and over 7000ppm the water is not suitable for pigs to drink.

Steps for interpreting water quality results for pig drinking water:

1. Look at the **Total Dissolved Solids** (TDS) - a measure of all materials that are dissolved in the water.
2. If the TDS is higher than the recommended value, determine which minerals are high.
3. Water containing 1,000 ppm **sulphates** may cause scouring in young pigs. The problem is the greatest in newly weaned pigs, as they have not been exposed to sulphates and are perhaps more susceptible.
4. Check that the **nitrate and nitrite** levels are within the recommended limits. A high level of either may be indicative of bacterial contamination. Nitrites are very harmful component in water. When absorbed, they will enter the blood stream and bind themselves with haemoglobin which is transformed into methaemoglobin, making it unable to transport oxygen. The recommended maximum level of nitrates in water is 100 ppm. A level of 10 ppm of nitrite is of concern.
5. If using surface water from sources such as dams and rivers, monitor levels of **bacteria including E. Coli** to check they do not exceed 1000 colony-forming units (CFU/100ml). Their presence can indicate bacterial contamination.
6. Check the level of **iron** in the water does not exceed 0.3mg/L. There are no known direct health issues associated with elevated levels, but it can cause build-up of scale and discolouration. Iron can support the growth of some bacterial strains. In combination, iron and manganese can impact water palatability and the effectiveness of some water-soluble antibiotics.
7. **Low pH water (< 6)** can create corrosion and cause damage to water lines. High pH water (>8.5) can form scale deposits and block the nipple drinkers. pH can influence the effectiveness of some water-soluble antibiotics and sanitation methods e.g., chlorination.

Consider **water hardness**, expressed as calcium carbonate (CaCO3) equivalents. It is primarily a measure of calcium and magnesium as carbonates, bicarbonates, sulphates, and chlorides. Water hardness has no known impact on pig health, but high levels (>300ppm) can impact the effectiveness of some water-soluble antibiotics as it can lead to an accumulation of scale causing pipes to gradually block and the flow rate to drop unnoticed.

8. **Chloride** by itself has little effect on pig performance. The recommended chloride level of 400 ppm is based on taste, not health hazard. If associated with Sodium, it can result in increased water intake and an increased urine output. Chloride can impact the activity of some water-soluble antibiotics.

Testing water

It is recommended to test water annually to detect any changes in water quality or to investigate issues such as low or erratic water intake or blocked pipes.

For microbiology analysis, a sterile container provided by the testing laboratory is required. For sample collection:

- Do not rinse the container or remove the small tablet (chlorine neutraliser) from inside.
- When removing the cap, hold it at the top making sure that fingers do not come into contact with the neck or the inner surface of the cap.
- Do not lay the cap down or allow it to touch anything.
- Allow the water to flow for 2-3 minutes to clear the lines.
- Refrigerate the sample if not being sent immediately.
- Check with the laboratory for sampling and timing instructions. Some laboratories won't accept samples after a certain time of day or on Fridays for microbiology analysis.
- Samples must be analysed within 24 hours.

For a routine water quality analysis:

- Use a clean plastic or glass container to collect the sample.
- Rinse the container and lid three times with the water that will be tested.
- Allow water to flow for 2-3 minutes to clear the lines.

- While samples are awaiting transport/collection, chill in a fridge (3–5°C).

Cleaning water lines

It is important to clean water lines regularly.

Poor maintenance of water lines results in the formation of biofilm which is a layer of microorganisms contained in a matrix (slime layer), on surfaces in contact with water. Their presence in drinking water pipes can be responsible for a wide range of water quality and operational problems.

Mineral deposits (iron, manganese, calcium, and magnesium) inside drinker lines will build up and provide a shelter for micro-organisms.

The combination of these events increases the pathogen load, reduces the volume of water available at the drinker and decreases the efficiency of chemicals and medications uptake.

Once established, biofilms are difficult to eliminate.

Correct sanitisation and cleaning methods are necessary to reduce growth of biofilms and bacterial contamination. A deep clean is often necessary to dislodge contamination and re-sanitise the system.

After cleaning, all nipples should be checked for flow rate as biofilm and solids can reduce or impede water flow through nipple drinkers.

The water delivery rate should be 500 ml/min for nursery pigs and 1000 to 1500 ml/ min for grow-finishing pigs.

Water quality and its access should be part of an integrated farm management approach when there are on-going animal health or performance issues.

Pigs can acclimatise to some water quality problems, but there is no doubt that poor quality water can adversely impact on health, welfare, and performance.

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ISSN 1836-974X

Published by the Department of Primary Industries.

Reference number PUB21/384