

A newsletter for pork producers



PigBytes

Issue 24 January 2015

In this issue

Yersinia can cause diarrhoea in growing pigs.....	1
'Tapeworms' in feral pigs.....	1
Read the Label!	2
Pig production videos	3
Pig Specialist Centre expands its expertise	3
Reflections on the European industry.....	3
Curious about GHG?	5
Vulval discharge diagnosis	6
Breeding sows in the small-scale pig herd	6
How to submit samples to a veterinary laboratory 7	7
Are your pigs getting enough water?	8
Pig tales	8

Yersinia can cause diarrhoea in growing pigs

Trish Holyoake

A recent case of diarrhoea and ill-thrift in weaner pigs was investigated by staff at the Victorian Pig Specialist Centre (PSC) in November 2014.

Disease affected approximately 2-5% of 8-14 week-old Berkshire pigs reared outdoors. Pigs responded to antibiotic treatment but never fully recovered and grew poorly after recovery from the initial disease.

Initial diagnostic testing undertaken on samples collected in the field were unrewarding.

Following on from this, a full post mortem was undertaken on an untreated 11-week-old pig with wasting and diarrhoea which was brought live to the PSC. The pig was euthanased at the PSC to obtain fresh samples for culture and histology.

Common causes of diarrhoea ("ileitis", Salmonella, Brachyspira spp.) were ruled out on culture, histology and specialist PCR testing.

Yersinia pseudotuberculosis bacteria were isolated from samples taken from the colon of this pig and a diagnosis of ileotyphlocolitis (inflammation of the ileum and large intestine) due to *Y. pseudotuberculosis* was made based on culture results, histopathology and by ruling out other causes of disease.

Yersinia spp. of bacteria can inhabit the gut of animals without causing disease. However, these bacteria have also been reported to cause diarrhoea and wasting in pigs, sheep and goats in Australia in certain circumstances. Infections are more common in winter and early spring.

This case highlights the importance of conducting a thorough clinical and laboratory investigation on pigs that are:

- (1) representative of the disease,
- (2) untreated,
- (3) fresh, and
- (4) early in the disease to determine the cause of disease.

Without a diagnosis, you are left in the dark trying to work out how to treat sick animals and prevent healthy ones getting sick.

'Tapeworms' in feral pigs

Bruce Watt (Local Land Services Regional Veterinarian Bathurst)

Two mature feral pigs killed in August 2014, as part of a pest control program near Palmer's Oakey, north east of Bathurst NSW, were observed to be heavily infested with 'tape worms.'

A worm, collected and submitted by the property owner, was subsequently identified as the euphoniouly named acanthocephalan parasite, *Macracanthorhynchus hirudinaceus* (the giant thorny headed worm).

The acanthocephalans are wonders, within their own phylum of highly specialised vertebrate parasites. Remarkably fecund the females of *M*

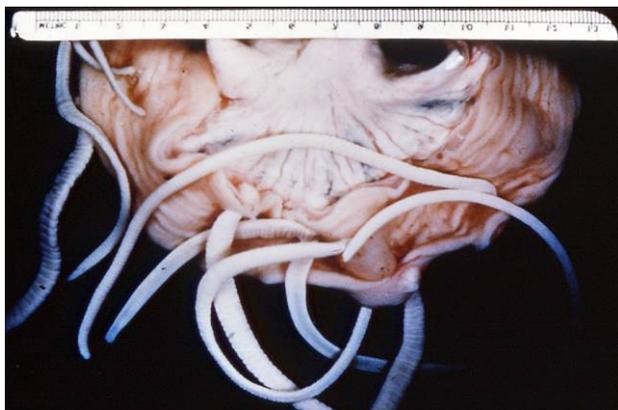
hirudinaceus produce about 260,000 highly resistant eggs per day and they are gutless, absorbing nutrients through their outer membrane.

The eggs, which can live for several years, hatch when ingested by the larvae of scarabs and other species of beetles. The worm larvae eventually become encysted both in the grubs and mature beetles and infect pigs consuming them. While most pigs are only lightly infected, thorny headed worms anchor their proboscis into the intestinal wall, causing weight loss and in some cases death through intestinal perforation (Soulsby 1971).

However, in one instance the parasite population caused such a high mortality in nuisance feral pigs (in Iranian sugar cane fields) that it was welcomed as a biological control agent (Mowlavi et al 2006).

M hirudinaceus can also occasionally develop in dogs that ingest beetle larvae.

Figure 1: Adult worms attached to the small intestine of the pig.



Source:

<http://cal.vet.upenn.edu/projects/dxendopar/parasitepages/acanthocephalens/mhirud.html>

While a parasite that may cause emaciation and sometimes death in feral pigs is not of major concern, *M hirudinaceus* could also infect free range pigs and is a potential zoonosis.

Although *M. hirudinaceus* seldom matures in people there are numerous reports of its recovery in humans. In some countries people consume beetle larvae either for medicinal or dietary purposes exposing them to the risk of infection (Shapiro, Schmidt 1971).

The prepatent period (the period between infection and detection) is 2-3 months and the worm lives in the host for about a year. Treatment is rarely given as the condition is usually only diagnosed at necropsy.

Ivermectin in feed to provide 0.1 – 0.2mg/kg for 5 days gives good results. A single dose of doramectin is only partly effective. Control, if

necessary, involves suitable disposal of manure and avoiding contact with the intermediate hosts, beetles. Sedimentation techniques are better than flotation methods for detecting eggs in faeces.

(From Radostits et al (*Veterinary Medicine*, 10th Ed., 2007))

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Soulsby E.J.L. (1971). Helminths, arthropods and protozoa of domestic animals, pp336-7

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Read the Label!

Trish Holyoake

A recent case of sudden death post-vaccination of sucker pigs highlighted the importance of reading labels when storing and administering pharmaceuticals to pigs.

In this case, a number of pigs perished within 30 minutes to hours after administration of a commercial vaccine.

The cause of death was considered to be endotoxemia (most likely resulting from bacterial contamination of the vaccine) based on the case history, clinical signs in affected pigs and laboratory test results.

Producers must remember that all medications/vaccines must be used according to label instructions, unless directed IN WRITING by your veterinarian. This includes storage and re-use.

Check the label for instructions on dosage and administration. Many vaccines now have instructions “use entire contents within 24 hours of first broaching the vial” or “unused vaccine must be discarded within 12 hours of opening”.

In the case highlighted above, the fresh vaccine bottle had been opened a week earlier to vaccinate a batch of piglets. The vaccine had been stored in the fridge after this time and then taken out to vaccinate these pigs.

To avoid having to throw out unused product, talk to your veterinarian about whether you can use leftover vaccine to administer to younger piglets.

Should you experience an adverse reaction in treated animals, advise your veterinarian who should then advise the manufacturer.

Remember though, you have no grounds to complain if you have used the product "off-label" without veterinary direction.

Pig production videos

Jayne Morgan

On the BPEX website there are a series of practical short videos for indoor and outdoor producers. (BPEX is the APL equivalent for the UK)

There are 3 groupings of video – indoor breeding, outdoor breeding and wean to finish. Videos are short only 3-4 minutes or shorter and are simple and practical.

Outdoor pig producers may find the outdoor breeding section very useful – with hints for handling and gentling gilts, moving sows at weaning, setting up hutches for farrowing and much more.

Just remember that they are in the northern hemisphere with a different climate, soils and regulations.

Visit the [Practical Pig Home](#) page at the BPEX website.

Pig Specialist Centre expands its expertise

Trish Holyoake

The Pig Specialist Centre (PSC) based in Bendigo Victoria services the pig industry in Australia through its diagnostic laboratory, production of "off-the-shelf" vaccines where no commercial product exists, research, stockperson training and extension activities. The Centre is pleased to announce the recruitment of a number of staff to support our activities.

Youssef Abs El Osta will be joining the PSC as the General Manager from Monday 23 February 2015. Youssef joins the team with a strong background and history in vaccine development with the pig and poultry sectors. He will pick up the reigns from Trish Holyoake who will refocus her activities to leading and managing the research, diagnostics and training/extension team.

Jade Weatherley and Matthew Silverstein are veterinarians who have joined the PSC to support extension/research activities and laboratory diagnostics, respectively. Jade comes to the group having graduated with First Class Honours and has just completed a Masters of Epidemiology and a strong interest in population medicine and biosecurity. Matthew also graduated with First Class Honours and has a strong interest in pathology, having worked in a number of veterinary diagnostic labs both in Australia and the US. Jade and Matthew will be mentored into pigs by Trish.

Alik Evans started with the PSC in September 2014 as the Vaccine Production Manager. Alik has specialist expertise in bacterial fermentation with a strong background in quality production. He will work closely with Youssef in the development and production of new vaccines.

Heather Snell joined the PSC as the Business Support Officer in December and has a number of roles including laboratory testing and reporting, quality management and administration support.

The team look forward to supporting the pig industry in 2015 and beyond!

Reflections on the European industry

Sara Willis

A visit to Eurotier, the world's leading trade fair for animal production in Hanover in November provided an insight of developments in the European pig industry.

Eurotier is a four day event held every two years and this year attracted 186 000 attendees and featured 2360 exhibitors from 40 countries on a hall space of 240 000m². This year along with other visitors from most states and territories in Australia, I saw firsthand the issues influencing European pig producers including animal welfare, environment enhancement and nutrition.

The feeding of gestating sows was promoted on many stands and included a range of electronic sow feeders which have been in use in Europe since about 1985.

They have become popular in the last couple of years with Australians replacing sow stall systems. The APL report "Planning, Managing and Evaluating Group Housing Systems" illustrates the adoption of some of these systems in existing buildings.

The developments in farrowing crate design were demonstrated by a dozen or more exhibitors. The basic concept of the Combi Farrowing Crate is that

sows are restrained in a crate for 2-3 days around birthing after which the crate is opened up to allow the sow to move freely within the pen with her piglets.

The more complex examples had a number of moving parts and adjustable settings whilst the simpler systems resembled a pen with protection bars for the piglets on at least three sides.

Figure 2: Vissing Agro farrowing pen with straw dispenser.



A Netherlands company Vereijken Hooijer has developed the "higher welfare" ProDromi concept designed by 14 Dutch producers. The idea is that sows and piglets can be separated if the piglets have their own climatic area. The Nanny is a sturdy and double-walled piglet cubicle that has a transparent cover. It is heated by a water bed and the walls can also be heated.

Danish company Egebjerg displayed its 'Welsafe' variety, a farrowing crate which can open, but doesn't take up as much space, due to a slightly smaller design of the stainless steel construction.

Figure 3: The Egebjerg Welsafe farrowing pen.

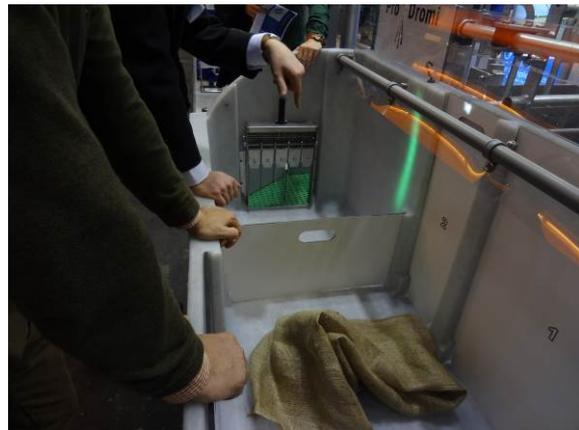


The floor area of the Combi farrowing pen was in the order of 2.4m x 2.4m (depending on model) compared with a typical Australian farrowing crate of 2.4m x 1.8m.

I was led to believe that the system attracted a subsidy in some parts of Europe. The larger size of Australian sows compared with European sows had caused problems on some farms here because the sows could not be restrained in the designated birthing area.

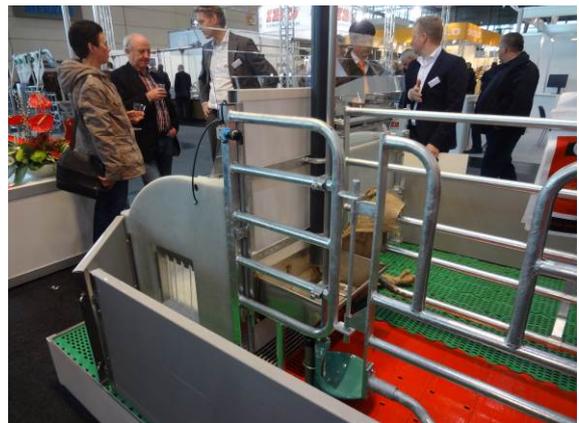
Farrowing took place in the open pen with little protection for piglets resulting in high pre weaning mortality. The European manufacturers have been made aware of the problem and modifications are being made to some designs.

Figure 4: The Vereijken Pro Dromi Nanny farrowing pen with piglet cubicle at the front of the crate.



A feature of the exhibition was the steps being taken to meet the welfare regulations that dictate that nesting materials must be provided for sows and environmental enhancement materials should be supplied to all pigs.

Figure 5: The Vereijken Pro Dromi Nanny farrowing pen complete with hessian sack for nesting.



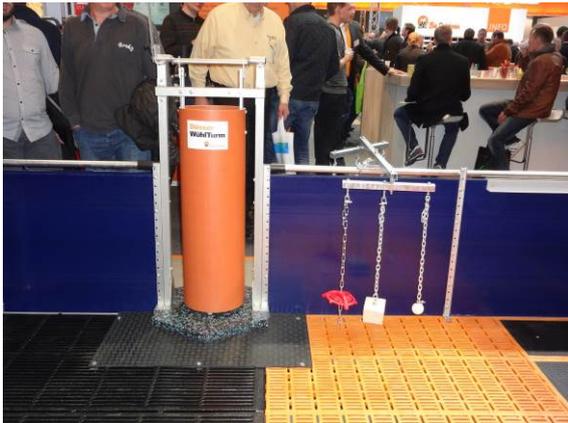
Work at Sterksel, the Dutch research centre has shown that sows allowed to complete nesting behaviour had improved nursing performance and maternal behaviour. Nearly every manufacturer included a straw dispenser and a hessian sack in the farrowing pen to meet the needs of the sow.

The environmental enrichment demands of legislation in some parts of Europe resulted in a

number of novel ideas being demonstrated. Forage towers and a range of toys were incorporated into pen designs.

The equipment company Weda launched its PlayLine a carousel changing toys every couple of hours so that new materials are available to the animals in the pen. All variations of materials can be fastened to the chains of PlayLine e.g., balls, biting stars, teething rings, wood, ropes, chain crosses, straw buckets, lick stones, etc.)

Figure 6: Big Dutchman weaner pen with foraging tower and toys.



The feeding of the young pig is an area that receives considerable attention in Europe. There are few farrow-to-finish units in Denmark, Holland and Germany with piglets sold at 25-30 kg to specialist finisher units often in another country. When the sow weans an average of 13 plus piglets the production of a fast growing healthy pig for sale is a high priority, resulting in very precise feeding systems utilizing high levels of milk products, cooked and cleaned grains and high quality protein concentrates (soybean and potato).

There are many companies specialising in piglet feeds and often have their own research facilities. Nutreco operate their own Swine Research Centre (SRC) in the Netherlands. It has state-of-the-art research facilities for sows, piglets and finishing pigs and they are able to individually monitor the feeding behaviour of all pigs.

Liquid feeding systems to make use of a wide range of products were also very popular. Big Dutchman demonstrated a system with Pulsed Electric Field (PEF) technology that enables whole crop maize silage to be used through liquid feeding systems.

With most producers and their staff allergic to weighing pigs, the opiSCAN – a measuring device for mobile weighing of pigs using a 3D camera was of interest.

In brief, the stock person walked through the pen taking photographs of the pigs. These are recorded on a lap top and presented as the weight of pigs in a group on the screen. The data can be used to assist selection for market and monitoring performance.

I acknowledge the support of DAFF and contributions from AusPac Ingredients, BEC Feed Solutions and DHA Rural for my visit.

Curious about GHG?

Ian Kruger (Ian Kruger Consulting)

Do you want to find out how much greenhouse gas (GHG) your piggery is emitting and how you can reduce these emissions? Do you want to know if you can improve profitability while reducing greenhouse gas emissions? Are you interested in opportunities to generate and sell Australian Carbon Credit Units through the Emissions Reduction Fund?

Pork producers during the last two years have learned about GHG emissions using the PigGas Calculator. They have found that there are potential environmental benefits, cost savings, business income streams and product marketing opportunities available. This is regardless of the size or type of piggery.

The PigGas Calculator requires piggery inputs such as feed intakes, diets and pig growth data, a description of waste treatment and manure reuse systems, fuels and electricity used and pig slaughter numbers and weights.

The GHGs emitted from a piggery are mainly nitrous oxide and methane. Methane is emitted as a byproduct of biological activity in the pig's gut, in on-farm waste treatment processes and in the soil when manure is applied. Nitrous oxide is also emitted from biological processes in waste treatment systems and in soils after applying manure and effluent.

Using the PigGas Calculator, methane and nitrous oxide emissions are calculated for your piggery and then converted into kilograms (kg) of carbon dioxide equivalents (CO₂-e) affecting the atmosphere.

Based on the efficiency of the pig production system and the kilograms of pork sold per year, the emissions intensity is calculated in kg of CO₂-e per kg of pork. These emissions intensities can be compared across different piggeries and across products from different industries.

On-farm emissions intensity measurements on Australian farrow to finish piggeries so far have

ranged from 1.1 – 8 kg of CO₂-e per kg of pork, with an average of 3.4 kg of CO₂-e per kg of pork. Where do you fit in this range? So far, emissions have been calculated on over 20% of Australian production. Most piggeries are able to make significant savings in GHG emissions. These GHG reductions have averaged 44% for all the farrow to finish piggeries measured.

Not all the emissions savings are technology driven such as covering anaerobic ponds to capture methane. Many emissions and cost savings are possible by making simple management changes on-farm such as adjusting feeders to minimize feed wastage or making simple changes to waste management practices.

A typical consultation requires about 5 hours on farm to collate information and perform baseline piggery emissions calculations. Once this is done, the PigGas Calculator can generate different scenarios or feasible options to reduce emissions by making changes to production, waste treatment, manure land reuse and energy variables.

The PigGas Calculator can be downloaded for personal use from the Australian Pork website <http://australianpork.com.au/industry-focus/environment/greenhouse-gases/>

There is still an opportunity for a limited number of producers to have a free PigGas consultation visit and a report written for your piggery. The National PigGas Extension project is funded by Ian Kruger Consulting, the Australian Government and Australian Pork Limited.

If you would like to be considered for one of the remaining PigGas consultations, contact Ian Kruger before the end of February 2015, phone 0401 365 488 or email iankrugerconsulting@gmail.com

Vulval discharge diagnosis

Karen Moore (DEDJTR, Victoria)

The presence of vulval discharge in sows does not always indicate there is a problem. It is normal for healthy sows to have a small amount of clear, odourless discharge around farrowing and estrus.

However, a foul smell or an excessive amount of discharge indicates that there may be an infection that requires investigation and treatment. Pussy discharges with or without blood may indicate infections of the reproductive and/or urinary tracts.

Collecting swabs for bacterial culture from the vagina or cervix of the sow can assist in the diagnosis of abnormal discharges but care must be taken not to contaminate the swab.

The external surface of the sow is contaminated with bacteria from faeces and the environment, so precautions must be taken to ensure swabs do not come into contact with these surfaces.

The use of a speculum or guarded swab will limit contamination. The swab must be introduced and withdrawn through the speculum or guard. Sampling from a number of sows may also assist in identifying the causative organism.

Diagnosis of infectious discharge relies on the presence of significant numbers of bacteria in pure/predominant culture. Subsequent antibiotic sensitivity testing on pure cultures will assist veterinarians and farmers to select the most effective antibiotic to treat the disease.

Antibiotic sensitivity testing of mixed (contaminated) samples will give misleading results and is a waste of time and money.

References:

[Vaginal microecology and vulval discharge in swine](#)
[Vulval discharge syndrome](#)

Breeding sows in the small-scale pig herd

Jayce Morgan

At the sale yards one day last year I met a lady looking over the boars to see if there was one she thought suitable to take home to breed with her 2 sows. She explained she did not want a boar all the time but did want to breed pigs.

There are a number of pitfalls to owning boars, particularly when you only have a small sow herd::

- Boars are expensive to purchase
- There are on-going maintenance costs to owning a boar that only mates a couple of times a year
- Boars get very large overtime
- Infrequent matings can result in poor fertility
- Boars can be temperamental

It is not best practice to purchase boars through saleyards as pigs are sourced from herds with unknown health status and commingled with many other pigs, therefore you are likely to introduce new diseases into your herd. Prevention is always better than cure.

In addition, boars sent to saleyards are usually culls – they maybe lazy, infertile, too big, are wounded or aggressive.

So what are some practical alternatives for those with small sow herds?

1. Avoid breeding pigs altogether. Buy weaner pigs direct from another farmer and grow them through to larger weights and sell them as growers or finishers.
2. Purchase mated gilts or sows from a reputable breeder. The disadvantages are the high cost of buying pregnant animals and the risk that they may not be pregnant or they may lose their pregnancies during the stress of transport.

Ensure that you do not transport heavily pregnant females as this breaches state welfare legislation. The advantage is that someone else handles the breeding.

3. Artificial Insemination. Best results are always achieved with the presence of an active chomping and interested boar. However there is a product called 'Boarmate' which contains the pheromones produced by the boar. The product is designed to mimic the boar so will increase the chance of the female standing to be mated if she is in oestrus.

BUT to do AI you need to know when she is likely to come into oestrus so you can co-ordinate the semen delivery from the AI centre. If a sow's piglets are weaned at 3-4 weeks and the sow is in reasonable condition (body condition score 2-3) and on good feed, she is likely to return to oestrus within 4 -7 days post-weaning. If you are not weaning piglets until 6-8 weeks then you may need to synchronize oestrus.

Talk with your veterinarian about how to do this. Also talk to your semen supplier so you understand their requirements in terms of supply and delivery.

4. Approach the farm where you purchased your sows. You may be able to come to some arrangement where you borrow a boar. That way you will not be bringing any new diseases into your herd.

How to submit samples to a veterinary laboratory

Brenda McCormick (DEDJTR, Victoria)

When animals get sick and/or die, it is important to know the reason. Your veterinarian can help here by conducting post mortems and/or submitting samples collected to a diagnostic laboratory for testing.

Your veterinarian may also provide instructions to you for the collection and sending of samples if they are unable to get to your farm on the day. The aim of this article is to provide some "best practice" guidelines for submitting samples to a veterinary laboratory for confirmatory diagnosis.

1. Include a laboratory submission form. Your laboratory can email you these if you or your vet don't have one already. Details to include on the submission form are:
 - a. Contact details of the submitting Veterinarian
 - b. The property owners name, postcode and property identification code (PIC number).
 - c. Animal species and age.
 - d. Site of specimen,
 - e. Brief, salient history and disease(s) suspected,
 - f. Treatment to date,
 - g. Date specimen collected,
 - h. Ensure each sample is individually labelled and include details for reporting and charging purposes.
2. Ensure the samples submitted are:
 - a. appropriate for the tests requested
 - b. the samples are from untreated animals
 - c. are representative of the overall problem.

If in doubt, contact your veterinarian or the laboratory for advice.

3. Collect the samples into the correct container. If sending samples by post or courier, it is advisable to use swabs in transport media for culture purposes and include a large amount of sample if possible. If additional testing is to be done, eg rotavirus, also include a sample in a screw capped container.

If requesting histopathology, place a small section of tissue (1cm diameter) into 10% formalin at a ratio of 1 part tissue: 10 parts formalin. Screw the lid on tightly and then place this jar into another larger jar in case of leakage. A nappy wrapped around the sample container will also assist to mop up any leakages.

Pack specimens in a plastic bag within the transport box so that they do not leak or odours do not escape! (Attempt to keep liquid

samples upright) and include ice packs to keep specimens cool before sealing the carton.

4. Be mindful if you send samples late in the week, that they may not arrive at the laboratory by the end of Friday and will sit over the weekend in a hot environment. Also, **do not** address samples to individuals as the samples may sit in their private mail boxes if they are away.

Are your pigs getting enough water?

Jayne Morgan

Good water supply is essential for pigs. Water consumption ranges from 2-3 litres per day for weaners up to 9-12 litres per day for finishers, while a lactating sow can consume over 50 litres per day.

Water intake affects feed intake in all pigs. Pig performance in growth, reproduction and lactation is affected when water is insufficient for the pigs' needs.

It is a requirement of the welfare code that:

- Drinking water or another wholesome liquid must be easily available to pigs **at all times** to meet their physiological water needs.
- Automatic watering systems must be checked daily
- A stock-person responsible for pigs must take remedial action if persistent bullying is restricting access to water.

It is also legislated that:

- Feeders and waterers are kept in good working order, positioned so they do not cause injury and inspected daily
- The piggery has backup systems available that can be relied upon should there be failure or malfunction of a regular system for feed or water.

You also need to be sure the water is accessible to the pigs – within easy reach – drinkers not too high or too low and enough drinkers for the number of pigs.

Water pressure is important also – 0.5 l/min for weaners, 1 l/min for growing pigs, dry sows and boars and 2 l/min for lactating sows.

Gravity feed systems may need boosting with a pressure pump or a header tank to get required flow rates.

Water troughs will need protection to prevent pigs getting into the trough. Wallows should be provided for outdoor pigs and sprays or drippers for indoor pigs for cooling in hot weather.

Are your pigs getting enough water?

Figure 7: Bars across the top of troughs prevent pigs using the trough as a wallow. Pigs need clean water with <1000ppm total dissolved solids.



Pig tales

Jayne Morgan

Pig tales is a newsletter for pig farmers from the Department of Agriculture and Food, Western Australia (DAFWA).

Useful articles from their December 2014 edition include:

- Fat deposition and eating quality in immunocastrated pigs
- Preparing for summer, checking drinker flow rates and Man versus fly
- Porcine Epidemic Diarrhoea virus (PEDv) factsheet
- Trends from the UK
- WAPPA news and much more

This newsletter and previous editions are available from the DAFWA website. [Pig Tales newsletter](#)

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (January 2015). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user's independent adviser.

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