



PigBytes

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Stock Diseases (Porcine Brucellosis) Proclamation 2013

Amanda Lee

Brucellosis in pigs (porcine brucellosis) is caused by the *Brucella suis* bacterium. *B. suis* infection has been reported in feral pigs in northern Australia.

The findings of the 'Detection of brucellosis and leptospirosis in feral pigs in New South Wales' project during 2012 and 2013 provided the first tangible evidence that feral pigs in northern New South Wales (NSW) harbour *B. suis*; these results provide a plausible explanation for recent human and canine cases of brucellosis related to pig-hunting in NSW.

Brucellosis is a notifiable disease under NSW legislation, which means you have a legal obligation to notify authorities if you know or suspect that stock (including pigs, cattle, sheep and dogs) are infected with *B. suis*.

You can notify of a suspected or confirmed notifiable disease using the [online form](#) or fill in the [notifiable animal disease form \(PDF 44KB\)](#) and fax it to NSW DPI Biosecurity on (02) 6361 9976.

Further information on porcine brucellosis can be found in NSW DPI [Brucellosis in pigs Primefact](#).

There are restrictions in place in relation to *B. suis* for pigs moving into NSW that originate from or have moved through Queensland or the area of Western Australia and the Northern Territory that lies north of the Tropic of Capricorn.

These restrictions apply to all pigs including pet pigs. The Stock Diseases (Porcine Brucellosis) Proclamation 2013 outlines revised conditions, which will provide pig producers with more flexibility, and includes the additional option of a veterinary declaration rather than a blood test for pigs moving into NSW from Queensland.

The new conditions are:

1. The pig is from a herd that tested negative for *B. suis* within the 30 days immediately preceding the movement into NSW; or
2. The pig is over 6 months of age and has tested negative for *B. suis* within the 30 days immediately preceding the movement into NSW; or
3. The pig is from Queensland and:
 - (i) accompanied by a declaration completed and signed by a veterinary practitioner (Schedule 1 Declaration) and a declaration completed and signed by the owner or manager (Schedule 2 Declaration) of the pig at the time it was consigned for movement; and
 - (ii) the movement of the pig occurs within 14 days of the date the Schedule 1 Declaration was signed and within 14 days of the date the Schedule 2 declaration was signed.

The Stock Diseases (Porcine Brucellosis) Proclamation 2013 can be found at NSW DPI website under legislation or in the [Government Gazette 8 November 2013 page 5120](#).

For further information, please contact Amanda Lee on (02) 4640 6308 or 0417 316 918.

Keep your herd Brucellosis free

Jayce Morgan

Daily stock inspections, good biosecurity and good herd records are the cornerstones of a healthy and productive herd management regime.

Outdoor herds are 'at risk' of infection with swine brucellosis or leptospirosis in areas with active feral pig populations. It may only take one pig to infect your herd.

Pigs contract these diseases through mating – natural or AI if the semen is from an infected boar; or from consumption of infected material such as afterbirth or dead piglets.

Figure 1: Any boar with unevenly sized testicles should be examined by a veterinarian. This old boar was seen at the saleyards.



Source: Jayce Morgan

Both these diseases are zoonotic and infectious for humans and some other animals. Humans contract these diseases through poor personal hygiene and contact with infected body fluids when handling carcasses or other infected material. Early symptoms may be flu-like but can become more severe or of long duration. Seek medical advice if you suspect you are infected.

Pig herds may be protected from leptospirosis by a comprehensive vaccination program in the breeding herd. Boars and sows are vaccinated every 6 months or sows mid gestation before farrowing.

The best protection for pig herds from swine brucellosis is good biosecurity. Brucellosis is a venereal disease and the breeding herd is affected. Sows may abort, birth weak and dead piglets and have a discharge. Boars may exhibit severely inflamed and enlarged testicles. Suspect or confirmed cases of swine brucellosis must be reported to the authorities as it is a notifiable disease in NSW.

Ensure fencing around the pig paddocks is in good order to keep feral pigs out. A permanently fenced buffer zone around the internal pig area could be good insurance. There are suggested fence construction ideas in the [Brucellosis in Pigs Primefact](#).

If you have sightings or other evidence of feral pig activity on your farm contact the relevant state department for control advice. In NSW contact the [Local Land Services](#) for your area.

If you have doubts about the reproductive health of your herd contact your veterinarian.

Treating Prolapses in Pigs

Trish Holyoake

Prolapses of the rectum, vagina and uterus occur sporadically in pigs in all management systems. Sows with a prolapsed uterus should be euthanized immediately as these cannot be corrected. When a rectal or vaginal prolapse is detected, immediate action should be taken to either treat, salvage for slaughter or euthanise the animal.

The choice of action will depend on the condition and age of the pig, the condition of the prolapse and the equipment and skills available to the person-in-charge of the animal.

To ensure a good outcome for pigs with prolapses, it is vital that all pigs are inspected at least once daily to detect disease early. Farrowing sows should be inspected more frequently.

Rectal prolapses

Rectal prolapses usually affect pigs from 8 to 20 weeks of age. The fundamental cause is an increase in abdominal pressure (eg due to coughing and/or constipation) which forces the rectum to the exterior. The onset is sudden.

Small prolapses may return to the rectum spontaneously. In most cases however the prolapse remains to the exterior and becomes swollen and filled with fluid. It is prone to damage and haemorrhage and where pigs are loose-housed, cannibalism and bleeding may result.

Pigs with rectal prolapses must be immediately isolated. Spray the prolapse with an antiseptic/fly repellent and repeat this once or twice daily. If the prolapse is smaller than the trotter of the pig and is fresh, it can be replaced.

Figure 2: Pigs with rectal prolapse should be separated from other pigs as soon as the condition is noticed.



Source: Trish Holyoake

Talk with your veterinarian about reduction and replacement of fresh prolapses. Otherwise healthy pigs of marketable size with small, fresh rectal prolapses can be marked as “suspect” and sent for salvage slaughter, ideally housed singly at the back of the truck to avoid damage from other pigs.

However, prolapses are unsightly and may be perceived as poor welfare by anyone seeing affected pigs en route to or at the abattoir as they invariably become damaged during transport.

Consult with your veterinarian for pigs with damaged or dried prolapses – sometimes surgery can be used to salvage the animal. If the prolapse has been badly torn, consider euthanasia. In a proportion of pigs the damaged tissues become scarred with constriction leading to rectal strictures.

Vaginal prolapses in sows

Vaginal prolapses usually occur sporadically in farrowing sows. These can be replaced by a veterinarian or a trained stockperson under veterinary supervision.

The best outcome occurs when the prolapse is replaced as soon as possible. Once the prolapse is replaced, it can be held in place with a purse-string suture. These sows are best culled at weaning (with the suture removed!)

How to save more piglets

Trish Holyoake

Saving piglets was one of the key topics in a presentation delivered by Dr Tim Safranski from the University of Missouri during his presentation at the “Happy pigs = healthy business” seminar held in Bendigo on 5th March 2014.

The seminar, sponsored by the Department of Environment and Primary Industries, Australian Pork Limited and Chris Richards and Associates, attracted an audience of 71 pig farmers, consultants, pharmaceutical company representatives and researchers.

Our other key speaker, Professor Morgan Morrow from the University of North Carolina, spoke on euthanasia of pigs with a focus on use of carbon dioxide for euthanasia of baby pigs.

Figure 3: Neil McSkimming, Responsible Sourcing Manager – Livestock & Seafood for Coles presents to the audience at the “Happy pigs = Healthy business” seminar held in Bendigo.



Source: Trish Holyoake

Some of the key lessons from Dr Safranski’s talk included:

- Newborn piglets need oxygen, warmth and colostrum in the first hours of life to survive.
- Key to providing oxygen is to supervise farrowing and assist where necessary to deliver piglets. As litter size increases, stillbirth risk increases – particularly for those piglets born last in the litter. It pays to assist sows sooner after Piglet #7: from 30-40 minutes between piglets (before #7) to 20 minutes between piglets (after #7).
- Sows can be induced to farrow to assist in supervision and/or to allow better management of farrowing room movements. There is no evidence that inducing sows to farrow increases stillbirth or pre-weaning mortality rates. The key is not to induce earlier than 2 days before the sows’ anticipated farrowing date. It is vital that you accurately record mating dates and have an understanding of the gestation length of sows on your farm.
- Newborn piglets’ core body temperatures drop quickly after birth, particularly in cold farrowing

pens with open flooring. In utero, piglets are kept at a temperature of about 38.5C, and ideally need an ambient temperature of around 34C after birth. It is helpful to provide some solid material (torn newspaper, old carpet) behind the sow at farrowing time to reduce heat loss from piglets via transfer to the floor. Staff supervising farrowing should place newborn piglets under the heater immediately so as to minimise energy loss.

- Colostrum is the first milk produced by the sow and is available to the piglets in the first 24 hours after birth. It is vital that piglets get colostrum, as it is rich in antibodies to fight off infection. More importantly, colostrum provides energy to newborn piglets. Studies have shown that about half of the piglets found dead from apparent overlays by the sow had empty stomachs – suggesting that these piglets' deaths may have been prevented if they had fed.
- It is important that stockpersons can count the number of functional teats for each sow and assign the matching number of piglets. Where foster sows are not available, consider split suckling in the first day or so.

For more information on the "Happy pigs" seminar or on how to care for farrowing sows and piglets, contact Trish Holyoake trish.holyoake@depi.vic.gov.au

If you would like to hear Dr Safranski's talk go to the [PigLink website](#).

Stress Hormones and their effects in pigs

Jayce Morgan

While delivering a ProHand course recently some piggery workers asked for more information about stress hormones and their effects on the pig.

So what is stress?

Stress is any physical or environmental event that removes an animal from its relaxed and contented state of being.

A stressor is anything that causes stress in an animal and may include temperature extremes – too hot or too cold; over-crowding causing competition and fighting for food, water and space; stockperson attitudes and behaviours that affect the way they handle pigs; inadequate housing, food or water; strange events or noises or even just a simple change to routine.

However pigs can also become stressed when faced with a familiar routine if they had a bad experience the last time they were in this routine.

What are stress hormones?

Stress hormones are hormones produced by the body in response to stress. They stimulate the metabolic systems within the body to prepare the animal to cope with the stress.

Production of stress hormones is complex and there are 2 main sources of hormones produced in response to stress.

1. The glands known as the HPA axis – hypothalamus, pituitary and adrenal glands – and the hormones they produce. Cortisol is the most well known stress hormone and is produced by the adrenal cortex.
2. The sympathetic nervous system (SNS) stimulates release of the hormones often attributed to the body's 'fight or flight' response to stress or danger – adrenaline and noradrenaline otherwise known as the catecholamines.

How can stress be measured?

Stress hormones can be measured in most body fluids for example blood plasma, urine and saliva. The effects of stress can also be detected from changes in heart rate and blood pressure, changes in stereotypical behaviour and effects on the immune response.

Meaningful interpretation of these measures relies on prior knowledge of the individual animals before exposure to the stressor which is not always possible with animals – collection of the data may cause stress and confuse the results.

In livestock industries therefore stress is often measured by the changes in production – liveweight changes, appetite and growth rates; effects on reproduction – returns to service, pregnancy and farrowing rates and litter size; or changes to health status of individual pig or herd. Stress usually has a negative effect.

Individual animals may also react differently to the stressor. Genetics, health status, age, sexual maturity, stage in reproductive cycle – gestation or lactation, and prior experience can all modify an animal's response.

There is also the issue of the type of stress, its intensity and duration or the length of time the animals are exposed to the stressor.

How does stress affect the pig?

1. Ease of handling is one of the more noticeable attributes affected by stress in pigs. Stress may

cause pigs to be erratic in their movements, be aggressive, display a fearful response or simply not want to move. Where possible the cause of the stress needs to be addressed to restore easy handling.

Look for unfamiliar objects or obstacles, trying to move too many animals through too small a space; inappropriate behaviour from the stockperson - too keen, aggressive or excitable; environmental factors such as too hot, too cold or insufficient lighting; health status – are pigs sick or wounded.

2. Stress can have financial implications on the carcase value and meat quality of the pig. The main quality concerns for fresh pork are pale soft exudative (PSE) meat or dark firm dry (DFD).

Both are the result of *post-mortem* glycogen metabolism. Conversion of glycogen to lactic acid and the speed conversion post-mortem determines the pH of the meat. PSE meat is the most economically important.

PSE is the result of the rapid conversion of muscle glycogen to lactic acid in the warm carcase post-mortem; muscle pH falls rapidly and the muscle is denatured or damaged losing fluid. The meat is no good for processing and drip loss is severe when cooked.

DFD meat results when there is insufficient muscle glycogen and the pH falls normally; but reduced glycogen means a higher pH than normal. The meat is darker in colour and dry when cooked.

3. The effects of stress on reproduction depend on the timing of the stress, genetic predisposition to stress and the duration and type of stress. The stages of reproduction most sensitive to stress include ovulation, implantation of the embryo and expression of sexual behaviour as these are directly controlled by the neuro-endocrine system. In most cases stress has a negative effect on reproduction.

However in some cases stress can be stimulating; the stress of transporting sows or gilts in anoestrus may induce a return to oestrus.

4. Research results have also indicated that high fear levels in sows can decrease the number of piglets by up to 1.6 piglets per sow per year.
5. Animals that are stressed often have impaired immunity. This may result in pigs carrying subclinical infections or being more susceptible to disease. This in turn will affect growth rates and carcase composition.

6. Pigs with high fear levels have reduced growth rates by up to 5%. This means herd feed efficiency will be reduced and pigs take longer to finish to a marketable weight.

Figure 4: Pig behaviour with people is a good indicator of how well the pigs are handled.



Source: Jayce Morgan

The stress response is a normal part of animal physiology. It has helped animals survive difficult situations. However continued stress has a negative effect on animals. The stock person's job is to keep stress levels as low as possible by attending to the pig's welfare needs: feed, water, housing and health.

Stock persons are the constant in the pig's daily life. Pig behaviour tells the outsider a lot about the treatment of the pigs in your care.

Optimising your diagnostic testing

Karen Moore

Submitting samples to the laboratory takes time and money. To get the most from your diagnostic testing it is important that samples are not only collected and transported correctly but are taken from representative animals and are the correct samples to diagnose the disease.

It is important to understand that identifying different diseases will require different types of tests. Some diseases can be tested for directly at the lab, such as culturing *E.coli*, whereas others cannot be easily diagnosed and will require other types of tests; for example serology to test for antibodies to *Mycoplasma hyopneumoniae*.

It is vital that you sample pigs from your herd that are representative of the problem. Within a population of pigs there will be pigs at different stages of disease; some will be recently infected while others will be recovering.

If the aim is to identify an infectious agent it is important to sample recently-infected pigs showing typical clinical signs. Sampling a pig with a long-standing illness is unlikely to identify the true causative agent of the disease.

Avoid sampling from pigs that have been treated with antibiotics, as this will reduce the chance of isolating disease-causing bacteria.

In a disease outbreak situation affecting a large number (>5%) of the herd, ideally, sacrifice (euthanise) and collect samples from 3 or more pigs to get a good picture of the problem. Post mortem samples should be collected from animals that are as fresh as possible; ideally those that have been sacrificed.

Samples for bacterial culture must be collected as cleanly as possible to avoid contamination. Contamination can lead to incorrect diagnoses as the contaminants often overgrow the pathogen.

Submit substantial volumes of faeces (swabs should be well covered) and large pieces of tissue for culture (ideally 3cm diameter or more).

Samples collected for histopathology should be placed in 10% buffered formalin solution immediately post-collection to fix them. These should be no more than 1cm diameter and should be placed in formalin at a ratio of 1 part tissue: 10 parts formalin.

Label all samples with the date of collection, sample site/organ and farm ID.

It is preferable that samples for bacterial culture reach the laboratory the same day that they are collected. If this is not possible they should be placed in transport media and kept cool. Most robust organisms such as *E.coli* will survive well under these conditions; however this is generally not the case for fastidious organisms such as *Haemophilus parasuis* (the cause of Glasser's disease).

The best option in these cases is for the whole pig or the unopened joints or inflamed serosa, to be submitted. We recently successfully isolated *Haemophilus parasuis* from the intact joints of a pig euthanised on farm that had been opened up under aseptic conditions in our laboratory.

All samples should be accompanied by a completed accession form and submitted by your consulting veterinarian, or under their direct supervision.

Table 1: This table provides a list of the appropriate specimens for bacterial disease testing.

| Disease | Specimen | Other testing available |
|--|---|-------------------------|
| Abscess | Swab | |
| <i>Actinobacillus pleuropneumoniae</i> (APP) | Affected lung | |
| Arthritis (including <i>Mycoplasma</i> spp.) | Carcass, affected joint, synovial tissue, or joint fluid | PCR |
| Atrophic rhinitis (<i>B. bronchiseptica</i>) | Swabs must arrive at the lab within 12 hours. | |
| Enteric Colibacillosis | loop of duodenum,, rectal swab, caecum swab | PCR for toxins |
| Erysipelas (<i>Erysipelothrix rhusiopathiae</i>) | Entire carcass, liver, heart, spleen, kidney, lymph node, affected joint. | |
| Glasser's disease (<i>Haemophilus polyserositis</i>) | Entire carcass Unopened joint and inflamed serosa | PCR, serology |
| <i>Lawsonia</i> sp. | Non-culturable agent Faecal sample | PCR, serology |
| <i>Mycoplasma hyopneumoniae</i> | Affected lobe(s), blood for serology | PCR, serology |
| Pasteurellosis | Affected lung lobe | |
| Salmonellosis | Loop of intestine/colon, faeces, lymph nodes, spleen, and lungs | |
| Swine dysentery | Colon | PCR |

Rising production costs in Queensland

John Riley and Sara Willis

The continuing upward movement in feed price makes it necessary to review the factors which contribute to the cost of producing pig meat.

With feed at \$500/tonne and a herd FCR of 4.0:1, the feed cost/kg of carcase produced is \$2.00. Whilst feed is still the major cost in pig meat production, non-feed costs such as labour, health, power, water, legislation, professional fees, industry levies and consumer demands have all increased.

On many units, non-feed costs (excluding depreciation and interest on capital) are \$1.10 to \$1.20/kg and will continue to rise.

While some producers receive \$3.20/kg for a pig of 75-90 kg carcase weight; not all pigs are sold at that price. The average of all pig sold can be as

much as 10 cents less/kg when fat pigs, condemnations and at risk pigs are included in the calculation.

A computer isn't needed to work out that with a feed cost of \$2.00/kg, a non-feed cost of \$1.15 and a market return of \$3.10, a call from the bank manager could be just a day or two away.

Table 2: Estimated Operating costs of producing a kg of pig meat

| Operating costs | \$/kg carcase weight |
|----------------------|----------------------|
| Feed | 2.00 |
| Labour | 0.40 |
| Health | 0.20 |
| Electricity & gas | 0.04 |
| Water | 0.01 |
| Other non feed costs | 0.50 |
| Total costs * | 3.15 |

* Excluding depreciation and interest on capital.

Source: JCR Assoc International.

Over the next few months, Queensland producers will need to accurately measure the performance of their businesses. Every unit has opportunities to improve Herd FCR. A movement of 0.1 in Herd FCR will move feed cost by five cents for every kg of pig meat sold.

Attention to detail is critical when economic pressures increase. Following are some key areas to examine on your farm.

Monitor growth performance

This should not just be limited to growth rate at slaughter but should also include weight for age monitoring at appropriate points in the growth cycle. This information will allow you to see whether pigs follow the target growth curve and to identify any periods of poor growth.

Determine feed intake for your pigs on your farm

This is the most important information that a nutritionist can use to minimise feed costs. Knowing how much feed a pig eats each day provides the information needed to set the levels of amino acids and other nutrients. It is not easy information to collect but provides important information for optimising performance and minimising feed costs.

Monitor carcass weight/quality

On most units there are opportunities for increasing market returns. Identifying and selling slow growers before they are lost in the system are simple tasks that will assist with survival. Weighing pigs to minimise the over and under weights for slaughter is also important.

Reduce feed wastage

- While it is impossible to eliminate feed wastage, this is an area for improvement for most farms. Physical wastage includes the obvious example of feed spillage but also wastage due to:
 - Poor adjustment of feeders
 - Worn/damaged feeders
 - Milling losses
 - Incorrectly stored ingredients
 - Overfilling hospital feeders, feeders on weekends, feed barrows and feed bins
 - Spoilt feed from moisture penetrating into silos or feeders or from urine or faecal contamination.
- Metabolic wastage involves no loss of feed but rather inefficiencies in feed utilisation due to:
 - Diet specification and feed intake not matched to the needs of the pig
 - Feeding overweight pigs
 - Feeding sick pigs that aren't marketable
 - Incorrectly formulated diets
 - Feed type (pellet, mash)
 - Poor feed processing

Examine ingredient costs and constraints

- Critically review every feed ingredient being used. Are they the best ingredients for the job? Are there alternative ingredients that could be considered? Is the range of ingredients too restricted?
- Examine the effect of limiting the inclusion of certain ingredients and the effect of forcing ingredients into the diet. Do you have diets rounded to bag or ½ bag sizes? What is the effect of relaxing this constraint?
- Consider group buying with other producers to reduce cost by buying larger quantities.

Review all diet formulations for additives

- Products usually get added to diets to address specific problems, but remain in the diet long after the problem disappears. Regularly review diets to consider why these are being included, are they the most appropriate and are they cost effective.
- Consider additives that may not be included such as enzymes, acids and functional ingredients like blood plasma.

Review quality control procedures

Consider the following key areas:

- Ingredient quality

- Is the AusScan NIR service used to determine grain DE values?
- Does the protein content of ingredients used to formulate the diet match the nutrient levels of the ingredients being used?
- Accuracy of feed milling and mixing
 - Are you assessing particle size? A large particle size leads to a reduced FCR,
 - Is the proportion of ingredients specified in the formulation the same as that actually being mixed. Are ingredients weighed accurately? Is the feed mixed for the required length of time?
- Feed delivery
 - Is there feed separation in silos and feed trucks? Are silos managed well (stale feed, water damage from condensation)?

New Book

Jayne Morgan

'Pork Production for pleasure and profit' is written by Neville Chad, a man who spent his working life producing stud and commercial pigs in Australia.

This book may be of interest to anyone with an interest in pigs. There is a bit of history, a bit of how to and a bit on the breeds of pig and pig selection. There is also a chapter on show judging with some advice from Colin Lienert OAM.

Go to the [Pork Production website](#) for purchase details or email Neville Chad:
nhchad@bigpond.net.au

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