

Pigbytes Newsletter

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Stringhalt, pigs and B vitamins

Jayce Morgan (with comment from Tony Edwards)

At a workshop on foot health at the recent Pan Pacific Pork Expo an outdoor pig producer asked what would cause pigs to walk with a very high stepping action with their hind legs similar to horses suffering stringhalt.

Horses suffering stringhalt walk with an “exaggerated and involuntary upward flexion or ‘puppet-like’ action in one or both hind legs.” Severe cases can progress to a goose stepping action which can severely affect horse mobility. In Australia the condition is seasonal (autumn and spring) and results from the grazing of pastures containing ‘flat weed’ (*Hypochaeris radicata*) often confused with dandelion. It is thought a mould develops on the plant and contains a mycotoxin which causes nerve damage. Treatment involves removing the horses from the contaminated pastures and then supplementing with magnesium.

Flat weed is listed as a plant poisonous to livestock in general and specifically to horses in the Poisonous Plants book by Shepherd. I could not find any reference to suggest this weed would cause stringhalt symptoms in pigs but if the weed is common in the pasture then caution is warranted due to its listing as poisonous.

The pig farmer asking the question said they had tried supplementing magnesium with no result and asked how can you tell what the pigs eat in pasture anyway? Well you can’t tell what they eat but you should know what plants are present in the paddocks as there are some plants that are quite toxic to pigs and can kill them if they are eaten. For example common heliotrope (*Heliotropium europaeum*), contains Pyrrolizidine alkaloids and when ingested, can cause liver damage and death in pigs.

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It was suggested the pig farmer try supplementing with pantothenic acid – a B vitamin. Deficiency symptoms of pantothenic acid include poor growth, goose stepping, posterior paralysis and birth of small, weak pigs. The bioavailability of pantothenic acid is described as low in wheat, barley and sorghum, but higher in corn and soybean meal. Supplementation of vitamins is easiest by using a vitamin premix from a reputable supplier.

Deficiency of riboflavin another B vitamin can also cause stiffness in gait.

While checking on deficiency symptoms I stumbled across research by Stahly *et al* 2007 whose work suggests that strains of pigs with high genetic potential for lean growth may have higher requirements for B vitamins than NRC recommendations currently suggest.

Pigs of high genetic potential for lean growth when supplemented at up to 4 times NRC recommendations of the B vitamins niacin, pantothenic acid, riboflavin, B12 and folacin, from 9kg to 29kg exhibited significantly faster growth rates and better gain: feed ratios.

Those particular B vitamins were chosen because of their role in protein accretion and energy metabolism.

Talk to a pig nutritionist or vet before you experiment with dose rates of vitamins – some can cause toxicity at higher dose rates and you can't just vary the amount of vitamin premix that you add to the ration. You may need to purchase specific vitamin compounds or alter the ingredients of your diets.

Comment from Tony Edwards A.C.E. Livestock Consulting Pty. Ltd.

'In the 40 years I have been involved in pig production, I had never seen the classic goose stepping symptoms until last year in NZ where grower pigs developed these symptoms due to pantothenic acid being left out of the vitamin/mineral premix.

Some vitamins are known to be antagonised by various compounds (for example Vitamin D3 and cobalt) but I don't know of a specific antagonist to pantothenic acid (but maybe some plant alkaloids could have this effect).

So if the background levels in the feed are low and there is no supplementation, there is a likelihood that symptoms may appear, especially if there is some antagonist in the feed.

Most commercial vitamin and mineral premixes would provide supplementary B-vitamins well above the NRC requirements, as these basically refer to the threshold below which deficiency

symptoms may appear, rather than being optimal levels for efficient production.

The Stahly work for instance demonstrated that pantothenic acid supplemented above the normal levels can improve energy metabolism and reduce the backfat of grower/finisher pigs.

So although we have traditionally added 10-15 mg/kg in feed there are cost effective benefits to adding 30-50mg/kg in feed.

With regard to the observations of the pig producer in your article, I wonder if the premix has been left out. This would be the most probable cause.'

References:

Dr John Kohnke BVSc, RDA, Australian Stringhalt
http://www.eques.com.au/health/MAR-07/australian_stringhalt.htm

Shepherd RCH 2010. *Is that plant poisonous? An Australian Field Guide for livestock pets and people.* (Excellent reference – has colour pictures of most weeds.)

University of Missouri Extension Vitamin Requirements of Swine <http://extension.missouri.edu/p/G2321>

Swine Nutrition 2nd edition edited by Austin J Lewis and L. Lee Southern 2001.

Stahly *et al* 2007 "Dietary B vitamin needs of strains of pigs with high and moderate lean growth." *J. Anim. Sci.* 85 188-195.

Diagnosing the cause of lameness in grower finisher pigs

Trish Holyoake

Lameness in pig herds has significant health, welfare and economic implications. Outbreaks of lameness often occur in association with infectious arthritis in grower/finisher pigs, resulting in severe downgrade penalties, trimming and condemnations at slaughter.

Common causes of infectious arthritis include *Erysipelas*, *Arcanobacterium pyogenes*, *Strep suis*, *Staph aureus* and *Mycoplasma hyosynoviae*. Laboratory testing is required to confirm the diagnosis.

A farmer recently contacted us as approximately 5% of slaughter pigs were being condemned or downgraded due to arthritis. On farm, he was seeing 3-8% deaths or euthanased pigs plus others identified as problem pigs and being sold lighter. In all, 20% of those weaned would not be sold as prime pigs - either dying, trimmed or sold light.

Two legs from two lame finisher pigs, euthanased on-farm were submitted to the Pig Health and Research Unit to diagnose the cause of the

lameness. Abscesses and purulent material were observed during post mortem in the joints and surrounding soft tissue of both legs. A nearby joint on one leg had an excess of blood-tinged fluid.



Figure 1: Fluid from soft tissue abscess on hock joint.

There was evidence of arthritis in one joint. *A. pyogenes* was isolated. Further testing ruled out co-infections with Erysipelas and *M. hyosynoviae*.

A. pyogenes commonly lives in the nose and genital tract of many species, including pigs. Infections occur usually when there is some damage to the skin (eg. from tail biting), allowing for soft tissue abscesses to develop, which may spread to nearby joints. In this case, the farm had been experiencing concurrent problems with tail biting in pigs.

Affected animals require antibiotic treatment (tetracycline and penicillin-based antibiotics usually work). There is no vaccine against *A. pyogenes*.

Prevention requires management of the environment and husbandry to reduce or abolish the various conditions that predispose the development of *A. pyogenes* lesions. This may include reduced mixing of animals, controlling any vices that damage skin (eg. tail biting) and improving injection techniques.



Figure 2: Arthritis evident in carcass at the abattoir may result in carcass condemnation.

Wet bedding should be replaced regularly with dry bedding where pigs are reared on deep litter.

Ensure that the breeding herd is routinely vaccinated against Erysipelas. Consider vaccinating progeny for Erysipelas if this bacteria is involved and outbreaks are on-going.

The time factor in scour sample diagnostics

Tony Fahy

A common question when submitting samples for diagnostic tests is “How quickly do I need to send scour samples to the diagnostic lab for testing?”

In most diarrhoea cases in pigs, you need to rule out bacterial causes. Most bacteria will survive being kept in the fridge (4C) for days before dispatch to a diagnostic laboratory for culture.

However, the longer you keep the samples, the more likely you will get over-growth with other bacteria (usually *Proteus* spp.) which, complicates the diagnosis. Storing samples in the fridge for 3-4 days before dispatch is usually fine and this allows for collection of a number of samples over a few days (and/or over the weekend) for dispatch.

Samples should be sent as swabs in transport medium (you can get swabs from your vet or diagnostic lab) or in leak-proof containers placed inside two plastic bags (“double bag”). Keep samples cool in transit by placing them in a small esky or insulated lunchbox with an ice brick.

Send samples in an “Express Post” bag to the street address, NOT the PO Box address. This avoids the chance that samples may sit in a post office for days!

For PCR examination there is no problem of bacterial longevity in that we are looking for DNA from live or dead bacteria/viruses, so it does not matter if the organism is dead. Samples for PCR testing are not placed in transport media as this interferes with extraction of the DNA. Rather, they are collected as dry swabs or placed in special transport media. Check with your lab for what they prefer.

What is causing my sows to abort?

Trish Holyoake

We have heard from a number of farmers experiencing unusually high abortion rates in their sow herds recently. Abortion rates above 1.5% among mated sows require investigating, especially as each aborted litter is worth \$800-\$1000 in lost revenue.

It is not unusual to have a higher than expected incidence of abortions in March & April in Australia, associated with “Autumn Abortion Syndrome” and seasonal infertility. However, high abortion rates occurring out-of-season or excessively high abortion rates during March & April warrant veterinary attention to determine a cause.

Foetuses are aborted when there is reproductive failure after they have developed skeletons at around Day 35 of gestation. Reproductive failure before then is characterized in individual sows by returns-to-service (regular and irregular), reduced farrowing rate and reduced litter size.

Common causes of infectious reproductive failure, often characterized by abortions, include Porcine Parvovirus, Leptospirosis, infection of the sows’ uterus with miscellaneous bacteria (*E. coli*, *A. pyogenes*, *Staph aureus* etc.) and when the sow has a fever (eg. Erysipelas).

There are also suggestions that Porcine Circovirus type 2 (PCV2) has a role in causing reproductive failure. Notifiable diseases caused by Bungowannah virus and Menangle virus should be excluded in any investigation of reproductive failure.

An investigation of abortion should consider:

- Vaccination history of sows against Leptospirosis, Erysipelas and Porcine Parvovirus
- Review the housing & husbandry of sows during the at-risk period for evidence of excessive heat and cold, over-mixing and fighting
- Gross pathology of aborted foetuses and placenta
- Samples for laboratory testing: Foetal fluids, fresh & fixed tissue samples
- Testing bloods from cohorts of sows of different parity to determine exposure to Porcine Parvovirus, Leptospirosis and PCV2. This is most useful if abortions are occurring mainly in gilts to determine their level of exposure to these infectious agents before mating.
- Feed samples (mycotoxins, Vitamin A deficiency)

We recently isolated *Klebsiella oxytoca* bacteria from organs submitted to the Pig Health and Research Unit from an aborted pig foetus. This foetus had originated from a herd suffering higher-than-normal rates of late-term abortions. The diagnosis was supported by pathology in the lungs of aborted foetuses.

This bacterium has been associated with sporadic late-term abortions in mares so it is worth implementing strategies on this farm (short-term medication of mated sows, improved hygiene

during AI and in the dry sow pens), to reduce the likelihood of additional abortions occurring.

Smartphone apps for Smart Farmers

Greg Mills

‘Smartphone apps for Smart Farmers’ is a publication produced by Ag Excellence Alliance Inc with funding from the South Australian Department of Environment and Natural Resources.

The booklet contains a listing of over 130 apps listed in groups according to function. Groupings include Farm production, seed calculator, tank mix, cattle/livestock, utilities, administration, environmental sustainability, fires, weather, farming news, buy/sell equipment, navigation, finance and banking, lifestyle, entertainment and health.

Some are free, some you pay for but if you have a Smartphone this is a very useful guide.

<http://www.samdbnrm.sa.gov.au/Portals/9/PDF's/Land/Apps%20Book%20-%20iPhone%20Edition.pdf>

Bridging the Divide, Finding Common Ground

Greg Mills

Following is a link to a talk by Mike Platt Executive Director of the Indiana Pork Association which he delivered to the recent Animal Ag Alliance Stakeholders Summit. His talk describes the proposal to build a 2.600 sow unit to cater to 400,000 visitors per year. This piggery will be located on the same farm as the fully functioning Fair Oakes Dairy built for similar purpose - ordinary Americans visiting an operating farm to see where their food comes from.

<http://www.swinecast.com/mike-platt-bridging-divide-finding-common-ground>

Other speakers talks delivered at the Animal Ag Alliance Stakeholders summit can be found at this link:

<http://www.trufflemedia.com/agmedia/conference/2012-aaa-real-farmers-real-food>

First 24 hours crucial to piglet survival

Jayce Morgan

Recently Roger Campbell attended the Animal Science meeting in Des Moines Iowa 19th -21st March 2012. He circulated a couple of the more interesting abstracts and this one I feel deserves another mention.

In the trial 2,289 piglets' data were recorded and analysed to determine the effect of birthweight on piglet survival. Piglets' data were grouped according to birth weight (≤ 1000 grams or > 1000 grams); and the amount of weight gained in the first 24 hours after birth (≤ 25 grams or >25 grams weight gained).

The survival rate of piglets that weighed <1000 grams at birth was more than doubled when those light weight piglets gained > 25 grams in the first 24 hours of their life. This very dramatically highlights the significance of good colostrum intake for piglet survival especially for small piglets.

Table 1: Survival rates of piglets in the first 24 hours after birth based on their birth weight and their weight gain during that period.

	Survival Rate % Birth wt ≤ 1000 gm	Survival Rate % Birth wt > 1000 gm
Exp 1		
Gain 24h ≤ 25 gm	37	84
Gain 24h > 25 gm	95	98
Exp 2		
Gain 24h ≤ 25 gm	45	79
Gain 24h > 25 gm	91	96

World's Favourite Meat – Pork

Sara Willis DAFF Queensland

I was fortunate to be invited to attend the recent 28th Alltech Symposium in the US. I would like to thank APL and Alltech for their support. The conference theme was 'Feeding the World' while the pork sessions had the theme of the 'World's Favourite Meat – Pork'. A few of the highlights follow:

Dr. Bart Borg, Director of Feed Operations, Murphy Brown spoke about 'Optimal Feed Efficiency: The Key for successful pork production?

Feed efficiency for any group of pigs can be affected by a number of factors which might include sex, dietary energy, group health status, sale and placement weight, pellet or mash feed, genetics, use of Paylean and feed wastage.

At Murphy Brown they have found that for feed conversion to be a valuable indicator to follow, it must be adjusted to a standard set of criteria. Group weight, dietary energy and group mortality are adjusted back to a common base line so that comparison of the different adjusted feed conversion figures for different groups allows identification of the other variables that can be acted upon such as feed waste differences between groups.

His take home message - feed conversion is an important parameter to follow but should be standardized for benchmarking so that the efforts to improve costs are not misdirected by chasing a low feed conversion value.

Dr Mike Varley from the Pig Technology Company, UK revisited 'The weaning age debate, should we optimise for the piglet or sow - 10, 18, 21 or 28 days?

Weaning age is variable world wide - UK – 28 days, Denmark 28-35 days, France 25-28 days, Spain 21- 28 days, Germany 28+ days and Sweden 35+ days with most countries choosing later weaning at this stage.

Using a simulation model Dr Varley showed that maximum physical sow productivity does not always equate to maximum financial productivity and over reasonable time spans where costs and prices change, the optimum weaning age actually changes considerably.

The take home message was not to view weaning age as a fixed parameter.

Table 2: Factors affecting weaning age.

Early Weaning	Late weaning
Less farrowing places	More farrowing places
Easier on sow	Harder on sow
More physical production	Less physical production
Reduced sow costs	High sow costs – feed inputs and cost
Increased piglet costs –feed and buildings	Reduced piglet costs
Reduced sow productivity	Increased sow productivity
Harder to rear piglets	Easier to rear piglets
Must have highly trained staff	Can get by with less well trained staff

Sung Woo Kim, Associate Professor of Animal Science, North Carolina State University spoke about 'Evaluating and avoiding the hidden threats of mycotoxins.

Mycotoxins are more prevalent than many people realize. In a study of 208 feed samples, mycotoxins were found 1318 times, which equates to 5 mycotoxins per sample. Chronic exposure to a low level of mycotoxins can result in reduced growth rates and feed intakes. The pig's immune response to the presence of mycotoxins can result in a greater reduction in growth rate than the reduced feed intake might suggest.

Mycotoxin risks include unsuspected patterns, multi-contamination, interactions, potential synergisms and bioavailability. There is also the risk of conjugated or masked mycotoxins, in which the toxin is usually bound to a substance such as glucose. These mycotoxins can escape established analytical techniques but still exert toxic effects comparable to those of free mycotoxins.

Consider the use of binders to minimize the risk associated with mycotoxin contamination.

Coming Events

Jayne Morgan

APL Roadshow will be held in Young NSW Wednesday 12th September (in conjunction with NSW Farmers Pork Group) and in Shepparton Vic 18th September, no Queensland visit this time. Contact Emalyn.Loudon@australianpork.com.au

Optimising Group Housing Refresher Course will be held on October 16/17 Toowoomba Qld; and October 18/19 Tullamarine Vic. Contact Emalyn.Loudon@australianpork.com.au

Bendigo Pig Show October 26th and 27th – Pig Show from 9am to 2.30pm Friday followed by speakers and a Breed Showcase

Saturday 27th from 9.15am until 5pm Hands on Pig Workshop with Dr Tony Fahy and Dr Trish Holyoake
Only Show in Australia with all 8 Pig Breeds.
Contact Katy Brown rarepigs@bigpond.com

NSW DPI Pig Industry Group

Jayne Morgan
Livestock Officer 02 6763 1257

Greg Mills
Industry Development 02 6750 6312

Ian Kruger
Environmental Engineer 02 6763 1272

Amanda Lee
Pig Health Coordinator 02 4640 6308

Tim Burfitt
Manager Intensive Livestock Industries
Development 02 6391 3729

Victorian DPI Pig Industry Group

Dr Trish Holyoake
Senior Veterinary Officer – Pigs 03 54304412

Dr Tony Fahy
Manager Pig Health & Research Unit 03 54304595

Patrick Daniel
Manager Pig Health Monitoring Service (PHMS)
..... 03 54304570

Queensland DAFF

Sara Willis
Senior Extension Officer 07 4688 1214

Pigbytes is a newsletter from the pig industry teams at NSW DPI, Victoria DPI, and Queensland DAFF

Editor:
Jayne Morgan
jayne.morgan@dpi.nsw.gov.au

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