Practical Health

# Insight (41)

Alex Eggen
info@alexeggen.com

# Pork now at No. 2

**Pork has now been toppled as the No. 1 meat that is consumed globally. Global statistics are never 100% accurate, but the threat that poultry would take over the pork position sooner or later has been with us for many years. And now it is time to congratulate the poultry industry with this result, which is the outcome of their long term successful strategy. Beef, at No. 3 on the list, shows modest growth but is constantly losing market share to the two leaders.**

The poultry industry has focused on combining a low cost product with a high level of processing convenience – not only when considering slaughterhouse processing or family cooking but also through the development of a variety of fast food products. This has been combined with a number of successful commercial, globally operating, poultry meat dedicated restaurant chains, serving cheap and tasty meals.

The pork industry missed this type of strategy. The 'pork' objective was to produce lean meat that was sold at a higher price, targeting beef, to generate more income for the industry. But the resulting product was more difficult to sell than the more convenient to handle, more tasty and cheaper (poultry-) products.

Is there a way that pork can make a comeback and regain the No. 1 position? Realistically the answer is no. Poultry meat has many differentiating advantages above pork meat but we can learn and try to position pork in a more consumer oriented manner.

The demands of the mass consumer are price, health, taste and convenience. Pork can meet these demands to maintain its large share in the current markets. Major growth opportunities are, of course, in the developing world but then some issues have to be addressed. The target is to sell 'wholesome' pork where wholesome stands for healthy and nutritious pork. This implies that human health (zoonotic aspects) in developing countries has to be addressed as well as convenience and taste.

## Health

Per capita meat consumption will grow faster in the developing world. In these countries pork meat has often been on the menu for generations and during that period health issues did occur. They are mainly related to parasitic diseases where pigs played a role as a source of infection for humans. In the developed world the transmission of these pathogens was stopped by increasing hygiene and breaking the cycle by deworming, changes in housing conditions, meat inspection and by cooking. However, in the developing world the image is still that pork is not healthy unless overcooked, which kills taste and removes the juiciness. Overcooking also takes time which is in conflict with convenience. The new generation does not want to spend a long time in the kitchen.

The major parasites to deal with are Taenia solium (the pork tapeworm) and Trichinella spiralis. Infection with adult tapeworms is called taeniasis and infection with larvae of the tapeworm is called cysticercosis. The cysticercosis problem is still attracting a lot of attention and only recently the Himalayan Cysticercosis Conference (December 2018) was held in Kathmandu, Nepal; visited by scientists worldwide. Cysticercosis and taeniasis are reported from Asia, Africa and Latin America. Trichinella spiralis is occurring worldwide and is a notifiable diseases (OIE).

**High quality breed providing high quality meat (courtesy of VAF Rwanda).**

## Treatment and prevention

Taenia solium and Trichinella spiralis are sensitive to antiparasitic drugs, which may also help to treat an infection with Trichinella larvae but in case of an infection with Taenia larvae (cysticercosis) treatment is not always effective. But by far the most effective way to control infection with these parasites is hygiene. This does not only include having sanitary facilities on the farm to break the human/pig cycle but also to keep the pigs indoors on concrete floors. Regular deworming should be standard anyway on a pig farm.

When these three conditions are in place, the risk of selling pork meat with any of these parasites is minimal. These preventive measures should be part of the education of every pig farmer – especially now that we see more outdoor production in the developed world.

For Trichinella species (the smallest nematode parasite of humans) the USDA based CFR stipulates cooking temperatures (a minimum internal temperature of 72°C) and, when applicable, freezing temperatures and times. Also, for processed pork products regulations are drawn up to control human exposure to Trichinella and destruction of the carcase when Trichinella are found.

Examining a sample of the diaphragm muscle and detecting larvae with the help of a microscope, is still the method of choice.

## Taste and convenience

This part is probably the most difficult to achieve and will require long term investment. For the 'taste' aspect, progress has been made. For some consumers lean meat is still high on the list and some of the pork cuts will always be lean. Most genetic companies now have specific lines that bring more colour (red) and flavour to the meat by either intramuscular or by more fat surrounding (extra-muscular) the muscle. This may require differences in feed composition and/or feeding regime to get the most out of the taste improvement. Enhancement of taste can occur when specific feed ingredients are deposited in fat and fatty tissue.

Convenience relates of course to an easy way of preparation and by spending a relatively short time in the kitchen. The quality of the meat coming from modern genetics allows for this shorter cooking time and brings it to the range of time required to prepare a poultry meat dish.

Pork meat is also addressed in certain countries as the 'pink' meat. Not only to differentiate pork from 'white (poultry)' and 'red (beef)' meat, but also to indicate that the most delicious pork meat is 'pinkish' in colour when consumed and should not be overcooked.

On any BBQ a delicious pork chop or even a Cote de Pork will be ready in a maximum of 10 minutes. Of course these new cooking practices depend on good breeds, production methods and meat inspection services. These high standard production methods should therefore be brought to the attention of the consumers.

## Dedicated pork restaurants and pork dishes

In certain countries specialised pork restaurants are present. In Japan, for example, restaurants serve Tonkatsu – a dish of pork coated with breadcrumbs. The seasoned pork is deep-fried and ready in less than 10 minutes. It is traditionally served with a dark, savoury Tonkatsu sauce and shredded green cabbage. There are restaurants that serve Tonkatsu only but it can also be found in Japanese restaurants serving other dishes. In South Korea dedicated pork restaurants serving locally produced pork are highly appreciated. Here again, just as with Tonkatsu, the juiciness of the marbled meat is what attracts the consumers. These examples are specific and often localised, but a dish like 'pulled pork' which is already served in many countries deserves attention. It has exactly the demanded characteristics of being healthy, tasty and convenient. Wholesome pork is targeting the future! ■

Practical Health

# Insight (42)

**Alex Eggen**
info@alexeggen.com

# Managing the young Piglet

**A carefully planned mating process. A 3 month, 3 week and 3 day waiting period. All the care provided during pregnancy: the feeding regimes, the vaccination protocols. The hygienic procedures to bring the gilt or sow into a clean farrowing environment: deworming and treating for mange and mites. The carefully planned batch creation to occupy the whole farrowing unit with all sows in the same period of gestation; etc, etc. And then the young piglets are born and we easily lose 15-20% within the first couple of days. What went wrong? Or is this just the consequence of a high demanding activity?**

Young piglet mortality can vary greatly between farms and lower ranges of 5% up to higher ranges of 35% mortality are not uncommon. This piglet mortality is both an economic and a welfare issue. The majority of these piglets die during the first 36-48 hours after farrowing.

Piglet mortality is the result of multiple interactions, in which the sow, larger litter sizes with lower birth weight piglets, and the environment play a role.

Identifying a single cause, like crushing by the sow is difficult, as crushing is, in fact, often the result of interactions. Piglets that turn weak for whatever reason run a higher risk of being crushed.

This interaction is also known as the hypothermia-starvation-crushing complex. Piglets that are hungry are close to the sow, simply to be the first when the sow allows for suckling, and are thus more likely to be crushed when the sow suddenly lies down.

The young piglet is born with an immune system that is immature and needs to ingest colostrum within the first 36 hours after birth

Colostrum is not only a source of dietary energy but also contains the larger immunoglobulins that provide protection against a number of neonatal diseases.

With an environmental temperature in the farrowing crate that is too low, or when the floor where the piglets lie is too cold; the piglets become lethargic and are less capable of drinking sufficient colostrum. As a consequence, starvation will occur.

The environmental temperature for newborn piglets must be at least 34°C. When the temperature gets below this level, piglets will try to maintain the desired temperature level by huddling, shivering and by burning fat reserves. But by doing so they will lose body weight, which can never be the goal of raising pigs.

## Lessons to be learned

A number of critical factors are important when aiming for lowering piglet mortality:

- Choosing the right genetics, targeting the number of piglets the staff and the facilities can handle.
- Correctly feeding the pregnant sows during the different gestation phases.
- Farm specific breeder-vaccination programs aimed at protecting the unborn piglets and supplying them with the required protection afforded by (a) the right pathogen-specific-antibodies in (b) sufficient quantities.
- Cleaning, disinfecting and treating the sow against endo- and ecto-parasites before entering the farrowing unit.
- Preparing the farrowing unit with emphasis on hygiene, temperature and checking for the presence of the essential materials when the young piglets arrive (iodine, towels, iron, antibiotic products).

Sufficient qualified and trained staff, learning from previous mistakes and making sure that the recording materials are present, are other aspects that are often under-estimated as to how important they actually are.

The art of management is to create a production environment in which all these factors are taken into consideration and are compensating for each other. A simple example is that highly prolific sows delivering larger numbers of low weight piglets require sufficient and highly skilled staff.

In other words, when sufficient and highly skilled staff is missing, management should select genetics that deliver a lower number of piglets that are more geared to survive under the conditions prevailing on that farm.

It is better to lose one out of 12 piglets (8.3% mortality) than five out of 16 (31.2% mortality). Simply because the 11 survivors from the 12 born are likely to be heavier and are more capable of coping with the hardships of being alive.

Another example is related to housing conditions. There are too many farrowing crates that do not provide facilities for the young piglets to easily maintain their body temperature. These can be fixed materials like floor heating or heating lamps but also temporary materials that can provide a nesting space. Even in the tropics, night temperatures easily get far below the required 34°C, meaning that the piglets will burn fat to maintain their body temperature and will lose weight.

The same is true if clean creep feed is not provided to help the young piglets get energy from other sources than the dam.

Hygiene is the other extremely important factor when handling young piglets. Fighting pathogens is energy consuming for young piglets. The required energy either comes from the ingested feed or milk or from the young piglet's own energy resources.

Fighting pathogens can also be done using the sow by stimulating her to generate antibodies through vaccinations so that the piglets get 'energy free protection' from the dam when taking up colostrum.

This is by far the most suitable way to help the young piglets in their early stages.

The best example here is the neonatal E. coli and clostridium vaccines used in sows, which provide a near to perfect, passive, protection in the suckling piglets.

PED has shown us what can happen if such a vaccine is not available. Of course, as always, for a near to perfect situation certain conditions must be fulfilled.

## Passive protection

To protect the young piglets by sow vaccination a number of criteria must be fulfilled. First, you need to have a good identification of the pathogens affecting the young piglets.

In the case of neonatal E. coli, we need to know what are the adhesion factors and if the isolated E. coli produces a toxin that plays a role in the disease. If so, then a vaccine should be selected that has these different components and will induce sufficient levels of antibodies in the serum of the dams so that the colostrum will indeed provide protection.

The vaccination scheme, as stipulated by the manufacturer, should be followed and, in general, a period of 14 days between the last vaccination and the date of farrowing is required to build up the desired higher levels of antibodies.

Last, but not least, the earlier these antibodies are ingested by the piglet through drinking the colostrum the better. The quantity of both antibodies and milk ingested also plays a critical role. The more of both, the better. And what is even more important? Yes, management and, more specifically, 'colostrum intake management'.

Again, this is all to do with having enough and qualified/trained staff. The more piglets a sow delivers per litter, the more complicated and skillful the process of colostrum intake management is.

The question is always whether the available staff on larger breeding farms can handle all these details. Consider all these facts when lower piglet mortality is your goal! ■

**Not a large litter – but easy to manage.**

Practical Health

# Insight (43)

Alex Eggen
info@alexeggen.com

# International Health & pigs

**International health and pigs are two different matters, but they also have similarities. International (human-) health focuses on items like antimicrobial resistance and, for pigs, list A diseases are still important. Both matters suffer very much from the high level of international contact that characterises our current world. International travelling, trade and even migrating birds have an enormous impact on the spreading of resistance genes and pathogens.**

## One world, one health

This slogan finds its origin from a politically driven initiative. Our leaders believe that the world has become a 'Global Village' and that health is influenced by societal factors. In a society or village everyone is exposed to the same conditions. Ideally, all living creatures will have the same health status and live happily forever. But reality is, of course, very different.

The world is not one society or global village where health matters are concerned. Globally, there are enormous differences with regards to basic human and veterinary health practices. Products for humans or animals that are strictly regulated in certain countries are readily available to the general public in other countries.

A simple recipe written by the selling pharmacist is often enough. Prudent use of antibiotics and resistance monitoring is still in its infancy in many countries.

However, from a Global Village perspective, citizens from both these high and low health countries mix frequently. They either go as tourists or business travellers to the low health countries or come as migrant workers to the high health countries, and may pick up or bring back resistance genes. Other vectors like migrating birds may aggravate the situation.

An alarming paper appeared early in 2019 in which the detection of genes, conveying antimicrobial resistance, in a very remote area in Northern Europe was described.

These resistance genes were the consequence of over-use and abuse of antibiotic products in the human field in low health countries that are far away from the place where they were found. It is worrying, but little can be done to revert these dynamics.

Changing the habits in the low health countries will be almost impossible. For the high health countries it will be very difficult to prevent the import of the resistance genes. The current demographics are highly influenced by the immigrants coming to work in these high health countries and the global surge in international evacuees due to all the turmoil in the world. This trend will only continue. The travelling routes chosen by migratory birds is, of course, a fact that cannot be altered.

## One health for pigs

When considering One World One Health for pigs or pork products, the target is even further away. The recent devastating outbreak of ASF is a clear example of all that can go wrong when humans (often with an ignorant or uncaring attitude) and money are at stake.

Also, in earlier days with the CSF outbreak in the Netherlands and with the FMD disaster in the UK, the combination of humans and money was a crucial factor in spreading of the diseases. Most of the traders and pig farmers consider themselves individuals that try to benefit from every action they undertake or situation they get into. The general idea that they are part of a larger picture, that can only be successful when all individuals act in a responsible manner, is often far away.

The lucky ones in the industry have always profited from problems encountered by their 'unlucky' colleagues. When these unlucky farmers ran into problems, shortages occurred and more profit was made by those that escaped. The unlucky ones had to survive with often little public support as they were subject to what was considered a 'business risk'.

The system where public support provides financial means also carries risks. When the intervention price is above the market price, the number of reported cases goes up. When the intervention price is below the market price, the number of reported cases drops.

**Pork sausages are possible vectors to carry viruses over long distances.**


## ASF virus contaminated sausages

The appearance of ASF virus contaminated sausages is a worst case scenario. The single fact that they are produced indicates major breaks in any type of control program. When these sausages are commercially available they can act as an ASF virus transport vehicle, which is a nightmare consequence.

The pork ingredients used in the preparation of these sausages must have been infected or contaminated with ASF virus. In other words, pigs that were present on premises where an ASF virus infection was affecting the pigs were used to prepare these sausages. All pigs on these farms must be destroyed immediately and not sent for slaughter in an attempt to reduce the losses.

This is a typical example of where the interest of the individual should not prevail above the interest of the industry.

The practice of going for individual interest has to stop immediately. Only when ASF virus infections are detected quickly, immediately reported and all the pigs present destroyed, will the industry stand a chance of reducing the amount of ASF virus circulating in the field. When not acting promptly and allowing ASF virus to multiply in the pigs present on the farm, the possibility for ASF virus to spread will increase. Several cases of ASF virus infected sausages detected at border posts have been reported. This is an enormous risk for long distance spread of either ASF/CSF and other viruses.

## Investigating the unknown

For epidemiologists it is extremely important to know for how long pigs or wild boar can survive when they are infected with ASF virus. In that surviving period they will act as carriers. This means they are not necessarily clinically sick but are infected with ASF virus.

Currently, the ASF virus that is circulating is considered to have high pathogenicity (pigs die quickly) and not to be very contagious (spreading to other pigs/wild boars requires certain conditions).

These statements are based on early reports coming from Poland where very low numbers (<1%) of ASF virus antibody positive wild boar were found.

History has taught us that when viruses get the chance to circulate in their host (pigs, wild boar) that the virus will undergo mutations and will change, and often become milder or less virulent.

It is important to research the presence of ASF antibodies in the different infected regions and hope that the presence of ASF antibodies remains (very-) low.

In Europe massive culling/hunting of wild boar takes place and more wild boar meat will enter the market. When the percentage of wild boar that harbour antibodies against ASF is rising, the risk posed by international trade in wild boar products for spreading of ASF virus also increases.

We must know what is happening. Independent research involving all countries where ASF virus is present is needed. Epidemiological research should focus on both viral characteristics and the presence of antibodies. Whatever politicians say, differences between countries, combined with international travelling and international trade, will continue to have an enormous negative impact on the One World One Health initiative! ■

Practical Health

# Insight (44)

Alex Eggen
info@alexeggen.com

# Cost factor or Profit Centre?

Are sows a cost factor or a profit centre? It looks like an easy question to answer. Most will say that, of course, sows are a cost factor! But is the reality a bit different? Gilts and sows in pork production are so crucial that they deserve to be treated as essential for profit generation. How should we deal with this conflict? Does it depend on the genetic background or more on how they are managed? Whether cost or profit, both aspects, management and background, deserve our full attention.

## Cost factor

There is no argument that breeding stock is an integral part of the total cost on farms. It is also agreed that part of the final result of the farm finds its origin in the performance of the sow unit. You cannot see one without the other. The balance between total cost and cost of the sow unit has an optimum. Discussing cost factors requires an agreement on how to calculate costs.

When all the individual data are available, the total cost of a farm operation can be analysed and the cost-share of the breeding stock. With the individual data the explicit cost of the breeding stock only, the farrowing unit only and of the nursery and finishing unit, can be determined. It is also important to decide which cost benefit ratio the analyser chooses.

The feed/meat ratio, both in kg and in money terms, is often used. Whichever system is chosen, it has to be realised that they all influence each other.

Sometimes investments made in the breeding section surface only in the next production phase. And sometimes costs are only attributable to the production phase in which they are made. When analysing data, these insights are extremely important and not always obvious.

When total feed consumption is set against the total amount of pork meat sold, the feed part must include the feed consumed by the breeding stock (including boars).

We can also choose to calculate the feed-to-meat ratio for a wean-to-wean period and for the weaning-to-slaughter period.

In the wean-to-wean period important data to know are:

- Productive (pregnant or lactating) and non-productive days (empty, weaning-oestrus-interval).
- Underweight- and overweight body conditions.
- The correct application of creep feeding.

These three conditions have a great impact on the total feed consumption for the wean-to-wean period and on the number of piglets weaned and their (total-) body weight. These three conditions contribute positively to the total farm performance when executed in the correct manner.

The reality is that they are often present in a large variation and have a negative impact on the farm performance. That is also the reason that the difference between a cost factor and a profit centre is made by how well the farm manager can control these three parameters. For the good (read profit centre) and for the bad (read cost factor).

## Profit centre

The sow becomes a profit centre when the farm manager brings all the positive contributions to the forefront and manages to limit the negative impact of breeding stock.

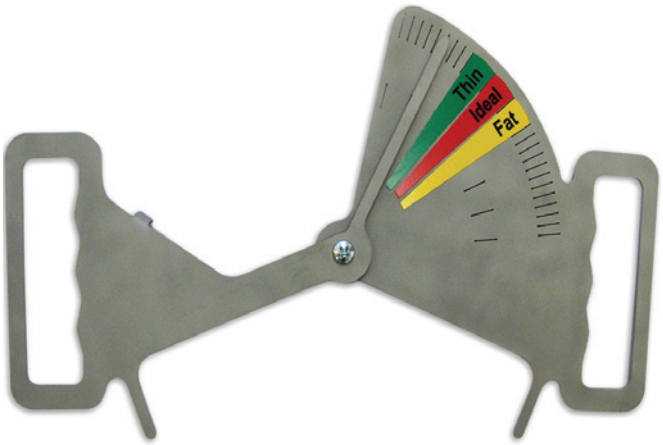
To illustrate this, the number of empty days is an easy one. The sow consumes feed, occupies a dedicated space and needs attention from the labourers but does not contribute in any sense to the performance of the farm.

In fact it even reduces the performance by consuming financial resources (feed). Sows that are too fat, same thing. Sows that are too skinny will not be good mothers and thus give piglets a poor start.

Sows that have lost >10% of their bodyweight during lactation will produce less fertile eggs. So routine bodyweight scoring is important.

These last lines are the crux which it all comes down to. Sows and gilts become a real profit centre when they are giving (enough) piglets a good start! This starts of course with the fertilisation of enough eggs, a good intra-uterine development, and by giving lively piglets everything they need to push them into the nursery. It even goes further.

Nursery and finishing stages still benefit from so-called sow or genetic factors. Piglets can inherit a lesser sensitivity for stress (more cortisol receptors), or having a more docile nature, making it easier for them to adapt to group housing. This is important when you want to raise them to the current welfare standards.




**This caliper was developed by North Carolina State University and is used to measure body condition on the farm in an easy manner.**

But the most important phase is of course the period just after farrowing up to weaning. Piglets experiencing a good start are much more likely to do well in the finishing unit. This is not a guarantee but the effect is there.

What can we do to give these piglets this desired start? Basically it all starts with the previous lactation period. Young piglets should have access to high quality creep feed as soon as possible.

The more protein and energy young piglets get through this creep feed the less they rely on their dam for nutrients. In return, it will be easier for the dam to maintain a good body condition.

The minimal lactation period is regulated in many countries for welfare reasons, so there is little we can do about that but how much milk and feed the piglets take in is something we can influence.

The preferred choice is sufficient intake of creep feed. The piglets will have a good start in a nursery when they are adapted to solid feed.

This is, of course, completely different from the importance of ingesting enough colostrum, from their own dam by all the piglets in a litter, in the first 24 hours after birth.

It is important to limit the number of cross-fostered piglets for more than one reason and keep records on which piglet has gone to which sow.

Sows should be helped to maintain the optimal body score.

Some variation in bodyweight is of course inevitable looking at the number of piglets she has to feed but we can help her by taking over a part of feeding the piglets. Feeding regimes for lactating and pregnant sows is a science.

Enormous efforts are made by feed companies to test their products for both the required quantity and quality of feed that a sow requires in the different stages of pregnancy and with different numbers of piglets during lactation.

The recommendations coming from this research needs to be followed. Furthermore, together with the farm veterinarian, a vaccination scheme for the sows should be set up to protect:

- The content of the uterus (for example Parvo).
- Transfer immunity to the young piglets (for example E. coli).
- Reducing the pathogen presence in the farrowing unit (for example PRRS).

The diseases that affect the neonatal piglets find their origin in either the sows or the environment. Both aspects are important to consider in a control programme. This can be by providing protection (through colostrum) or by changing the epidemiological picture by reducing the virus or bacterial presence by host vaccination.

A sow will be a cost factor when management is not making an effort to turn the sow into a profit centre. Turning the sow into a profit centre will be beneficial to all production phases on the farm! ■

Practical Health

# Insight (45)

**Alex Eggen**
info@alexeggen.com

# Raising Young Piglets

**Piglets are our pride and joy. They reflect everything we like in pork production. They represent the next generation, filled with energy, and they provide our income and the reason for our daily job. But still, irrespective of what we find, raising piglets is a difficult job and lots of details play an important role.**

In previous articles attention was paid to vaccination programs in sows, litter sizes, the balance between staff capabilities and handling low weight piglets, etc. In this article attention will be paid to other, equally important, details.

## Feeding the sow

A lot of research has gone into how handling and feeding pregnant sows influences the quantity and quality of young piglets and how it impacts farm profitability.

As an example: flushing is widely known and practiced but how many know that the positive effect is based on glucogenic energy in the period from weaning to mating?

This sugar based energy is provided by exogenic (external-) factors through handling and/or the diet and by using endogenic (internal-) conditions.

Endogenic factors are induced by, for example, inducing stress, which is done naturally in the weaning process. Removing the sow out of the farrowing unit provides an extra stress factor. Here stress provides a plus when the number of young piglets is the target. However, stress during the first 30 days of gestation is the main reason for less viable embryos and has a negative impact on litter size and uniformity.

Stress can be good or bad. You just need to know when and what the right balance is! At the end of gestation and specifically with older sows, other factors start to play a role. One of them is the duration of the farrowing process.

The longer the farrowing process the lower the pig vitality, leading to a higher piglet mortality. We are all aware of this. Farm staff tries to shorten the duration of the farrowing process by giving oxytocin by injection, at regular timed intervals. This action is not without risk. When oxytocin is not used correctly it will aggravate the situation leading to a higher perinatal piglet mortality. But by increasing the crude fibre content in the sow's late gestation diet, we can also decrease the incidence of prolonged farrowing. Recently conducted research has shown that this available crude fibre, that can be fermented in the hind gut, also provides an energy source having a beneficial effect on the growth of the piglets in late stage gestation.

A number of other observations were made like improved (hind gut-) muscle activity leading to less constipation, allowing for easier expulsion of the piglets and thus a shorter farrowing process.

At the recent 'Pig Health – Managing Change' seminar, held during VIV Asia 2019 in Bangkok, Thailand; Peter van't Veld (Denkavit) explained all these details and research findings to the delegates.

In another study the benefits of adding more crude fibre and/or a tall oil fatty and resin acid in the late stage diet of pregnant sows, was investigated. A range of parameters around birth was checked, including farrowing duration, piglet vitality, colostrum yield and colostrum-and thus IgG-intake.

These parameters are of course related and, when executed properly, will result in higher colostrum intake, and thus higher IgG levels, at both 24 hours after birth and at weaning.

These are all major factors in the life of the young piglet and essential for passing the stages of successful weaning, nursery and finishing. The piglets in this study had a higher pre-weaning weight gain and a lower mortality at moment of weaning.

## Cross fostering piglets

Cross fostering of piglets is another widely used practice that was introduced as an easy practical solution to solve the problem of large litters. But, as always, when something new is introduced, some users start to question the new technique and research groups pick up the message and investigate the matter. And, indeed, cross fostering is a technique with pluses and minuses. The plus is, of course, the convenience for the farmer.

Convenience is seldom for free; in most cases convenience bears a cost. The same is true in this case. The disadvantages that accompany cross-fostering are all resulting in less income from the original litter.

**Always take records when inspecting litters!**

The first 24-36 hours are very important for the piglets but even more important is the crucial connection of the piglet with the dam. Essential nutrients and immunological important substances are present in the colostrum. The piglets need to get these ingredients from their own dams.

Certain immunological compounds do not function when they come from a different (cross-fostered-) sow. These compounds need to have a certain genetic match and that is not present when the original dam is replaced by another sow on the same farm.

So what needs to be done? When cross-fostering it is crucial that the piglets who are going to be reallocated to other sows take up the maximum of colostrum that they can possibly get from their original dam. And only cross foster after 24-36 hours! During this crucial period immediately after birth, the access of the piglets to the dam for suckling needs to be regulated. Splitting the litter and only allowing so many piglets as the dam has functional teats, are options.

Besides cross-fostering, the other option is to continue with this process of regulating access until the piglets start to eat creep feed. But this is, in most situations, too labour intensive to pursue.

Research has made clear that piglets that are cross-fostered quickly after birth and did not have the opportunity to ingest enough colostrum, are not doing well during the lactation period and in subsequent other stages of production.

Therefore to check the practices on your farm, you have to identity the piglets that are cross-fostered in order to be able to quantify how much this 'convenience' is costing the operation.

## Creep feeding

Creep feeding is an important and underestimated aspects of young piglet raising. Hygiene in feeding practices and quality of the creep feed are key. In this part of our industry an enormous amount of research effort is dedicated to this subject and for good reasons. To feed the large litters that we see today the sow has to produce an enormous amount of high quality milk.

The older the piglets get the more milk the sow needs to produce. Bodyweight loss is, in these cases, inevitable and, therewith, a successful next heat and subsequent mating to provide a good litter, becomes risky. Also the weaning process will cause less problems when the piglets are used to solid feed.

But is all creep feed the same? No, great differences exist between composition and quality of the individual components used in creep feed formulation – just like in other processes on the pig farm.

Details are important. And to master these details, studying, keeping records and commitment are essential to find out what works best under the conditions prevailing on your farm! ■

Practical Health

# Insight (46)

**Alex Eggen**
info@alexeggen.com

# ESPHM2019

**The European Symposium for Porcine Health Management 2019 (ESPHM2019) brought together close to 1,600 swine veterinarians and workers in related industries, to the old city centre of Utrecht. The scientific committee had created a very interesting program including a good variety of keynote topics.**

The subjects ranged from data collection and management, antimicrobial resistance, animal welfare (raising pigs with long tails) to, of course, African Swine fever. Here are some of the highlights.

## Antimicrobial resistance

Professor Jaap Wagenaar's lecture dealt with political agendas and supranational organisations like the OIE and the WHO covering the research side, while Dr Andreas Palzer focused more on the impact this all has for veterinary practitioners. Both did a great job to take up this great challenge and update the audience on this hot topic.

Their lectures were very nicely complementary. The overall message is clear, when nothing is done the future for treating bacterial diseases will be dramatic. It is already late to turn the tide but we still can do something when we act in a co-ordinated effort. And a global 'co-ordinated effort' can only be done when there is a political will to enforce the agreed regulations.

Looking at surveillance systems for AMR and antimicrobial use (AMU) there are countries that have a reliable system implemented, but in Low and Middle Income Countries (LMICs) there is limited information about AMU and AMR.

As I have mentioned before in my columns, antimicrobials used without prescription, both for veterinary and human use, are often readily available in rapidly growing economies. We may assume that AMR is high in these countries. Combine this with the global trade of food products and travel of people, it is of high importance to develop interventions for AMU and AMR in these countries. But these regulations are often only present on paper.

Professor Wagenaar stated that AMR is a problem that we must address. The quantification of AMR transfer from animals to humans remains weak but that, irrespective of this discussion, any contribution to the problem should be addressed!

He pledged to have a clear and honest story towards farmers. His major concern is the implementation of policies into practice: the steps to achieve reduction are urgently needed.

Just like Professor Wagenaar, Dr Andreas Palzer stressed that an investment in animal health is required to pave the way for AMU reduction. Dr Palzer added that this can only be done by veterinarians and should give them a lot of responsibility and chances for the future. They will need more practical education and research to help in achieving this goal.

## Raising pigs with long tails

Simply because the EU Commission has decided to make a real effort in finally checking and controlling the implementation of the 'old' directives, raising pigs with long tails is high on the agenda of the pork producing industry in Europe.

The scientific committee had therefore invited Desmond Maguire, a senior official at the EU Commission's Directorate General for Health and Food Safety, to explain the EU perspective and Professor Nicole Kemper to explain that keeping pigs with long tails is possible.

Desmond made it very clear that it is a legal requirement. Routine tail docking of pigs is illegal and is only permitted, by exception, where there is:

- Evidence of tail biting on farm.
- Evidence of actions taken to address this.

But investigations have learned that tail-docking is done in over 95% of the piglet population. In other words it is done 'routinely' and this is non-compliant with the current legislation.

There will always be some tail biting at low levels, even when the tails are docked. There is no silver bullet to prevent tail biting under both tail docked and long tail raised conditions. Farmers should not focus on enrichment only. The complete picture is important and there is need to change the environment and management to better suit the animals' needs. Furthermore, both veterinarians and farmers are not used to rearing or treating pigs with tails. There is a definite need for training for all involved. There are also opportunities for veterinarians. They are key to promoting not only higher welfare to address the long tail issue but also the subject of reduction in antimicrobial usage.

They are instrumental in solving the puzzles and figuring out why tail biting occurs. By visiting more farms they can also judge best practices and execute the risk assessment: look at health, behaviour, pathology, environment and (zootechnical-) management

Professor Nicole Kemper see tails as indicators. Tail lesions are always an indicator that something went wrong before, which has an impact on production factors. Prevention of tail biting should be done long before you can see anything on the tails. And this is true for long and docked tails! The attitude towards raising pigs with intact tails has to change. Tail-biting is multifactorial with a multitude of known triggers.

Nicole also emphasised the human factor. An intensified human-animal interaction can decrease tail biting behaviour. In this process the farmer's eye is essential to prevent unwanted behaviour! She concluded that keeping pigs with long tails is possible – but that it is not easy. To change from docked to long tails puts a high demand on management.

She stressed that all actions to preserve the tail are also beneficial for production. Still there are some open questions, there is an ethical question on the suffering of the pigs (suffering by docking and by biting?) (which percentage of bitten pigs do we tolerate?) and there is the economical question: who pays for the extra effort?

**Delegates interacting during the break at ESPHM2019.**

## African swine fever (ASF)

On ASF, again two excellent keynote speakers were on the stage. Dr Philippe Houdart, Director Crisis Prevention and Management, from Belgium who is heavily involved in all aspects to fight the ASF outbreak in Belgium and Dr Andrea Gavinelli representing the EU (UnitG3) coordinating the control and eradication of infectious diseases.

Dr Houdart explained the potential introduction routes of ASF in Belgium. Contaminated leftovers on parking areas left behind by, for example, truckers, tourists, or seasonal workers. Contaminated equipment/clothing (vehicles, shoes) used by hunters, tourists and seasonal workers. Another option is through a nearby military training facility. The Illegal introduction of infected wild boar cannot be excluded and, although sad, intentional introduction can also never be excluded.

Although the ASF infection occurred only in wild boar in a restricted area of Belgium the economic impact is great, with > €100 million losses in trade.

Dr Gavinelli provided the audience with an excellent overview on regionalisation aspects, costs involved and the current ASF situation. We have to be prudent but in areas where pig farmers take biosecurity seriously, it seems possible to keep the virus out of the domestic pig population. And: no pigs are allowed under outdoor conditions in ASF infected areas! ■

Abstracts of the presented topics can be found on https://eaphm.org

Practical Health

# Insight (47)

Alex Eggen
info@alexeggen.com

# Information Management

**The future is predictable: A manager in any industry, including on a pig farm, receives more and more data originating from different sources that is supposed to help them in taking management decisions. But will the manager feel comfortable with the task of analysing all this information? And what should be the goal of gathering all of this data?**

First it should be discussed whether the manager can value the data coming from different sources and, secondly, the usefulness of the analysed data for the manager should be considered.

## Transparency

As with any information reaching our desk, transparency is key and the same applies here. It is important to know where the data comes from, how reliable it is, where it can be used and what the possible omissions in the data set are. These questions should be answered before any data is used.

Do not judge based on the results presented but have a close look at the materials and methods that are used to gather and analyse the data. This is because the materials and methods determine the outcome of any study. Even in the case of a scientific paper, any investigator can steer the outcome of a study by his selection of materials and methods.

Dr J. Berezowski, from the University of Bern, during a keynote lecture at the European Symposium for Porcine Health Management (ESPHM) 2019, explained to the audience that in the future it will even be more difficult to judge presented data.

In his words: "The massive volume of structured and unstructured data will be so large that it is difficult to process them using traditional database and software techniques."

He made reference to a publication by Saabith (2016) who described the four Vs used in data judging and processing: the first V relates to the trustworthiness, origin and accountability (called Veracity) of the data, the second V relates to the Volume of data in different presentation forms, the third V to Variety, meaning structured, semi-structured and non-structured data and the fourth V stands for Velocity, or batch related data, or from a stream, real-time or historical etc.

When you apply these four Vs to a normal commercial pig farm then the amount of data to be judged, analysed and processed is already enormous. And still it should be transparent! Therefore the main question for the Swiss research group of Dr Berezowski is: "Can we create new and useful information by combining many different data from the (Swiss-) pig production industry?"

They have already gathered a substantial amount of data and in the near future they hope to present results from this activity. But so far they have learned that big data collection and analyses is all about the people participating in the project.

The stakeholders should be convinced about the need to have more detailed insight in the interaction of their input in the total production process.

Dr Berezowski concluded that combining data across production chains can produce useful information, it is not rocket science but it is not easy. You need multiple disciplines and he stressed that working closely with data providers is essential.

## Managers' usefulness

Many years ago a visionary IT specialist told us that in the future managers would enter their office in the morning, hang their coat on a hanger and say to their office wall mounted full of computer screens: "Hey Wally, what is the news today?"

And indeed in some industries that work with structured data coming from a limited number of trust-worthy sources, the pictured scenario is close to reality.

Real-time information providing useful information is possible. That all of this can still lead to unwanted situations is also evident. A clear example is the past turmoil in the financial markets.

For the manager on the pig farm different opportunities are currently present to use data for management decisions.

Buying energy sources to heat the facilities in the winter from far-away sources and raising heavier pigs when the market demands indicate this preference, are just a few easy examples.

But it will go further than these examples. At the same ESPHM2019 symposium Dr Daniel Berckmans from the Catholic University Leuven, Belgium, introduced what we can measure now and what will be available in the near future.

In his lecture he referred to data collection for the purpose of:

- Health or the relationship between animal health and healthy food.
- Animal welfare.
- Environmental issues.
- Social importance.
- Economic importance.

This last aspect included what he calls the 'valorisation of knowledge' and that is the important factor. For managers information only has value when it can be used either for the purpose of staying in business or to increase the profit of the operation.

He also made the link between big data collection and Precision Livestock Farming (PLF) that he defines as a tool for management of livestock by continuous automated real-time monitoring of welfare, health, production/reproduction and environmental impact.

Interesting data was presented in the field of health monitoring and animal welfare.

Respiratory infections can be continuously monitored by sound recording and a relation between the increase or decrease of the coughing index and interventions could be made. The manager can follow this online continuous monitoring as a real-time activity without the need for them to manipulate the collected data themselves. In addition, links to feed and water consumption can be made easily.

When more independent factors that are measured give the same indication, the likelihood of making a correct conclusion increases. With the same data set antimicrobial use can also be monitored and linked to the efficacy of the treatment.

Regarding animal welfare, a similar example was given to monitor symptoms of stress or aggression. Real-time weight checking is already done by several means but by using cameras and analysing the body to a chosen reference body shape, more digital options are open.

**A manager in any industry, including on a pig farm, receives more and more data originating from different sources to help them in taking management decisions.**

## Conclusion

Several fully automated continuous real-time monitoring systems are already in place and are used in the management of both humans (elderly persons' care management) and animals.

PLF (Precision Livestock Farming) has the potency to give the manager more contact moments with the individual animal, or groups of animals, that need attention.

PLF is a system that will also help farmers and stakeholders to work towards more sustainable livestock production by making more optimal use of resources.

However, irrespective of whether we consider large scale or individual farm implementation of PLF, the collaboration between industry, researchers, farmers and stake-holders is essential.

It is also evident that nobody will be able to stop this development. It is human creativity and curiosity, coupled with the competitive environment of the global pork producing industry, that will continuously fuel development towards more real-time information that is used to increase productivity.

There is basically one driver – the value of the information for the manager! ■

Practical Health

Insight (48)

Alex Eggen
info@alexeggen.com

# Will China recover from ASF?

**Pork industry visitors to China have always been amazed. Firstly, by the size as, up to August 2018, half of the world's pigs were in China and, secondly, by the big differences between backyard pigs and the upcoming number of capital intensive, state-of-the-art production centres nicknamed 'Hog Hotels'.**

However, they are also amazed by the steadily growing and alarming list of incidents and disease outbreaks causing concerns.

When ASF started to spread in Eastern Europe, industry watchers warned of a possible ASF virus outbreak in China and the far reaching consequences.

The ASF outbreak involving a couple of hundred pigs in north-eastern China started a tsunami through the global food chain. Why? Because it happened in China.

## The importance of pork for the Chinese

Pork is a staple food for the Chinese. A meal is not seen as complete when it does not contain a piece of nice tasty pork meat or organs, intestinal material, brains etc. When the pork price goes up so does inflation.

When that happens with a single product then that product takes up a significant share of the daily expenses of the general public. Pork is also of crucial importance for the rural economy in China. And do not underestimate this importance as the rate of urbanisation in China is enormous. Everything that can slow down this rate is welcome and this applies to pork production in the rural areas. Furthermore, and almost by definition, backyard or small-scale production requires more labour compared to industrialised production methods, which is another important reason to maintain a large segment of small-scale farming.

But, as with everything, there are not only pluses but also negative points to be mentioned when looking at pork production in China.

Pork production requires a lot of water, estimated at 6,000 litres per kg. It produces a lot of greenhouse gases, ranking second after beef; and requires a lot of land for production (again second after beef).

Water and land are real issues in China. Environmental problems are also increasing in numbers and in severity. China also has a global responsibility in relation to the reduction of greenhouse gases held responsible for global warning.

So, China must make important and far reaching decisions: go back to the 500 million as before the ASF outbreak or reduce the pork population in China to levels that China as a country can manage, and rely on imports when necessary.

## Why should the Chinese import pork?

The answer to this question is relatively simple. When you import pork, you leave all the negative issues involved in pork production with the exporting country and the only thing you need to do is to organise the imports and enjoy your dinner.

Take the Netherlands as an example. Some 70% of all pork produced in the Netherlands is exported. The feed ingredients arrive in Rotterdam harbour. The pigs consume water and the imported feed and produce urine, faeces and meat. The meat is exported, and the urine and faeces stays in the Netherlands. It is easy to imagine the environmental issues. Water is, until recently, no problem for the Netherlands because of the rivers entering the Netherlands and the annual rainfall. But the Netherlands rainfall patterns seem to change.

Normally when you leave all the negative sides to the other party you pay for these 'services'. In the case of pork production and China this is not the case. Pork production in China is much more expensive than in the possible exporting countries like the USA, Canada, Brazil and in Europe.

When importing, China can both offer pork meat to their population at a lower price (or enjoy import tariffs!) and reduce the national need for feed and water, reduce environmental issues and choose from a large variety of pork supplying countries. So there is no dependency on a single country. A typical win-win situation for the Chinese!

Recent history has learned that several Chinese companies have expanded their production locations to outside of China. The production and logistic infrastructure is in place and taking into account the Chinese trade expertise, even the profit of the whole chain might end up in China!

## Can China import pork meat?

The answer to this question is of course Yes. It only depends on how much. The losses caused by the current ASF outbreak in China, and estimated by different sources, range from 100 to 250 million pigs.

If, just for the sake of discussion, we assume that half of the required amount is replaced by alternatives like poultry meat, duck, fish and meat replacers; this leaves 50-125 million pigs to be raised and slaughtered somewhere and exported to China. This triggers the immediate question: where are we going to produce these extra 50-125 million pigs?

To put these figures in perspective: 125 million pigs is the total annual production in North America; 50 million pigs is more than the total annual production of Germany or Spain. Given the current attitude towards intensive animal protein production it is highly unlikely that permits will be issued to construct all necessary extra production units.

Given the size of China and their preference for pork meat, the request for (imported-)pig carcases is so enormous that it is questionable if the world outside of China can help China for their requirements.

If the extra demand will or cannot be produced, and China still buys all they need on the world market, the rest of the world will face a shortage of pork meat. In this game the buyer (read China) is the boss and decides.

**Buying pork meat at a local market in China.**

## Can China recover from this ASF outbreak?

Before China can walk the path of recovery, they first need to have the ASF outbreak under control. This is already difficult enough but not impossible. Several countries have eradicated ASF virus from their pig population before, also without the help of a vaccine.

Every country that runs an eradication program needs to take the country specific aspects into account and so must China. From an outside viewpoint it currently looks as if the whole chain of pork meat production and processing is infected with ASF virus.

Infected processed meat like sausages is a nightmare, not only for the locations or countries where they are being transported to, but also for the meat processing plants where they come from. A lot of farmers in rural areas are suddenly deprived of income and will restock as soon as they can, which is likely to be too soon.

The restructuring of the Chinese pork industry requires large private and public investment in related supporting companies and controlling agencies. Nobody will know when these institutions will be operational. And then when all of this is in place and ASF is under control, it will be time to answer the question all of us want to hear: will China ever go back to the 500 million or will it take the luxurious position of sitting back and playing a dominant (buyers-)role in the power game called 'The World Market'? ■